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FEBRUARY 12TH, 1889.

JOHN BEDDOE, Esq., M.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From Dr. O. FINSCH.—Ethnologische Erfahrungen und Belegstücke aus der Südsee. Zweite Abtheilung; Neu-Guinea.

From the AUTHOR.—The Ta Ki, the Svastika and the Cross in America. By Daniel G. Brinton, M.D.

—— Notes on the History, Customs, and Beliefs of the Mississaguas. By A. F. Chamberlain, B.A.

—— Huron Folk-Lore. By Horatio Hale.

—— Verkehr und Handel in ihren Uranfängen. Von Prof. Dr. Ed. Petri.

From the ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.—The Scottish Geographical Magazine. Vol. v. No. 2.

From the ANTHROPOLOGICAL SOCIETY OF WASHINGTON.—The American Anthropologist. Vol. ii. No. 1.

From the BERLIN GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE UND URGESCHICHTE. Zeitschrift für Ethnologie. 1888. Heft 5.

From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE. Correspondenz-Blatt. 1888. Nr. 10–12.
From the IMPERIAL UNIVERSITY OF JAPAN.—The Calendar for the year 1888–89.
—— The Journal of the College of Science. Vol. ii. Part 4.
From the SOCIÉTÉ ARCHÉOLOGIQUE, AGRAM.—Viestnik hrvatskoga Arkeologickoga Družtva. Godina x. Br. 1.
From the TRUSTEES.—Twenty-second Report of the Trustees of the Peabody Museum of American Archæology and Ethnology.
From the SOCIETY.—Proceedings of the Royal Society. Nos. 273, 274.
—— Proceedings of the Royal Geographical Society. Vol. xi. No. 2.
—— Proceedings of the Society of Biblical Archæology. Vol. xi. Parts 2, 3.
—— Journal of the Anthropological Society of Bombay. Vol. i. No. 5.
—— Journal of the Society of Arts. Nos. 1886–1890.
From the EDITOR.—Nature. Nos. 1002–1006.
—— American Journal of Psychology. Vol. ii. No. 1.
—— Science. No. 309–312.
—— Photographic Times. No. 380.
—— Revue d'Anthropologie. 1889. No. 1.
—— Revue d'Ethnographie. Tom. vii. No. 4.
—— Revue Scientifique. Tom. xliii. Nos. 1–6.

The PRESIDENT, after some introductory remarks, read the following paper:—

On HUMAN REMAINS, *discovered by* GENERAL PITT RIVERS *at* WOODCUTS, ROTHERLEY, &c.

By JOHN BEDDOE, M.D., F.R.S., President.

THE three series of bones, on which the kindness of General Pitt Rivers has enabled me to comment, are of great interest as exhibiting beyond reasonable doubt, examples of two races of men which have successively occupied the same limited district, and almost the same spot. We are entitled, I think, to assume that the two series from the villages of Woodcuts and Rotherley represent a British population living under Roman rule, and the series from the Winklebury graves a West-Saxon population belonging to an early period of the conquest of Wiltshire, which may or may not have already mixed its blood with that of the prior occupants. The Britons may have descended from Belgic colonists or from their subjects; the frontier of the Durotriges is supposed to have lain further to the south.

The averages of the three series yield the following results:—

The Woodcuts skulls are the largest in circumference and breadth, the Rotherley series the smallest, the Saxons from Winklebury come between the two. In length, the Woodcuts average and that of the Saxons is about the same (188 millimeters); that of Rotherley is smaller. In height the difference is only 1 millimeter, the Saxons standing first (135), both the British series lower, and equal. As to cephalic index, if we lump together the two series of Britons, we may say that both races fall just within the boundary of dolichocephaly, as now defined, though the Woodcuts average taken separately just exceeds it, being 75·6, while that of Rotherley is but 73·7. The Saxon average, 74·7, is practically identical with that of other early Saxon or Anglian collections. The Saxons are on the whole more prognathous, *i.e.*, they have a rather larger alveolar index. The nasal index is smaller, the orbital index larger, in the Romano-Britons.

Of radii and arcs, the vertical and parietal are slightly larger in the Britons, the frontal distinctly larger in the Saxon men. The greater length of the frontal arc, and the comparative shortness of the parietal arc in the Saxons seem partly due to the greater fulness of the temporal region as compared with the posterior parietal which again is connected with the greater tendency to ellipticity in the norma verticalis.

The following table exhibits, roughly, the relative proportions of the radii and arcs, the measurements of the vertex being taken as the standard.

	Frontal.		Vertical.		Parietal.	
	Radii.	Arcs.	Radii.	Arcs.	Radii.	Arcs.
Saxons	90	91	100	100	103	102
Romano-Britons	86	87	100	100	102	104
Round-barrow ..	90	90	100	100	92	102
Rotherley ..	86	87	100	100	104	104

There are also sundry points of difference which, though they do not distinctly come out in the measurements, and though some of them are incapable of being tested in that way, are nevertheless appreciable and important.

Among these are the greater prominence of the superciliary ridges, as a rule, in the Romano-Britons. The difference

between the glabello-maximal and the ophryo-maximal lengths does not always fully express this prominence, being liable to vary also with the form of the occiput.

The chin is usually broader, rounder or more open in the Saxons.

Though the orbital index is greater on the average in the Romano-Britons, the orbit is generally rounder or less angular and square in the Saxons.

The form of the nose, perhaps I should say the probable form, has been noted in four of the Woodcuts, and six of the Rotherley series, and in four of the Saxons.

In three, and perhaps in four, of those from Woodcuts, it has been prominent and seemingly aquiline; in the whole of the six from Rotherley more or less aquiline; among the Saxons one is marked prominent, one slightly arched, one straight, and one "not arched." These observations confirm, so far as they go, the other evidence we have as to the form of the nose among the Anglo-Saxons[1]. It was sometimes concave, often straight, often slightly convex, without being very prominent in the face or forming a large angle with the plane of the forehead.

Some parieto-occipital or rather post-parietal flattening is noted in eight of the Saxons, but in only two of the Britons from Woodcuts, and three from Rotherley. This is a frequent feature in long Germanic skulls. On the other hand the off-setting (Absätzung) of the occiput, which German and Swiss anthropologists ascribe to their Reihengräber or Hohberg type, is little seen in these Winklebury Saxons. I have noted it in but one instance, No. 31[2]; whereas it is noted as considerable in two, and slighter in three others of the Woodcuts Britons, and as marked in one, and existing in two others of the Rotherley series. This point may be worth dwelling on a little.

Johannes Ranke treats the Hohberg-Reihengräber form, the leptoprosopic dolichocephalic of Kollmann, and the Kymric of the French anthropologists, as one and the same. In that case, this feature might be supposed to have been brought into Dorset and Wilts by Belgic invaders. But there is some evidence in the "Crania Britannica" of its occurrence hereabout earlier than the Belgic immigration. I lay no stress on the skull from Morgan's Hill, figured therein, which exhibits this "off-setting" in a notable degree; though only a flint implement was found with it Dr. Thurnam himself thought it Belgic. But there is a slight degree of this pecularity in the long-barrow skulls of West Kennet and Uley, and a greater one in the Parsley Hay and Ballidon Moor crania, which are brachycephalous probably

[1] See especially Mr. Park Harrison's paper on this subject.

of early date. Professor Macalister notes its occurrence in the Worlebury skulls. It is perceptible also in some of the skulls of the period we are dealing with, which are figured by Barnard Davis as Roman, but whose ethnic character is more or less doubtful.

On the other hand it is not a conspicuous feature in Davis's Saxon skulls, of which those from Ozingell and Wye (both in Kent) exhibit most of it. Of the five skulls figured by Virchow (in his "Beiträge zur phys. Anthr. der Deutschen") from the Frisian islanders of the Zuyder Zee, only one, that of a male from Schokland, shows any sign of it. It occurs in some only of the long skulls figured by Gildemeister from Bremen, and in none of the broader ones which he calls Frisian or Batavian.

On the whole, if it was really a race-feature, it must have characterised the military caste among the Belgic as well as among the Germanic conquerers. Admixture of the Frisian type may have lessened its prevalence among the Saxons of Wessex.

In the norma verticalis, there is as usual a somewhat greater tendency to the elliptic outline in the Saxon, and to the ovoid or even the coffin or pear shape in the British skulls. Thus in 15 of the Winkelbury, 12 of the Woodcuts, and 14 of the Rotherley Britons we have the following proportions:—

	Saxon.	Romano-British.	Ditto Rotherley.
Elliptic	6	4	4
Ovo-elliptic.. ..	4	..	..
Ovoid	4	6	3
Pear-shaped ..	..	1	7 { pear-shaped. coffin-shaped. heart-shaped.
Oblong-ovate ..	1	1	

The oblong-ovate form is the Sarmatic of Van Hölder; the heart-shaped approaches his Turanian type.

In both series the crowns of the teeth are more or less abraded by the use of hard food; but while those of the Saxons are wholly free from caries, it is found in those of no less than five of the Britons of Woodcuts.

Another remarkable difference is found in the stature.

General Pitt Rivers, following rules laid down by Topinard, and taking into account the lengths not only of the femur but of the tibia and of the bones of the upper extremities, arrives at the following conclusions as to this point:—

	Britons.		Saxons.
	Woodcuts.	Rotherley.	Winklebury.
	ins.	ins.	ins.
Males	(7) 5 f. 4	(11) 5 f. 1·3	(12) 5 f. 7·3
Females	(6) 4 f. 11·8	(3) 4 f. 10·	(9) 5 f. 1·4

These differences are very great; they extend to both the British villages, and to both sexes. The inferiority of the British to the Saxon males is in the one case 3·3 inches, in the other no less than 6 inches; that of the British to the Saxon females in the one case 1·6 inches, in the other 3·4 inches. It arises, not from any remarkable development in the Saxons, but from a remarkable depression in the Britons. Yet the two earlier races, contributories to the British stock, were, the one, the bronze men, tall and stalwart, and the other, the neolithic men of the long barrows, not, as a rule, particularly small. And Strabo was struck by the procerity of the British youths whom he had seen, and says distinctly that the Britons were taller than the Gauls. Of course there remains the consideration, not to be altogether overlooked, that our Woodcuts and Rotherley peasants may have descended in part from earlier races of serfs, of small stature, of whom we have few relics. Allowing that possibility, I would call attention to the occurrence of skulls among our present material which remind us distinctly of the neolithic race, and of some which may suggest the admixture of the bronze blood.

For myself, I am inclined to doubt whether these Britons, though certainly of stature so short as to constitute a notable and pregnant anthropological fact, were quite so short as General Pitt Rivers, on Topinard's rules, has made them out to be. My distinguished friend Topinard has recently criticised my view somewhat unfavourably in the "Revue d'Anthropologie"; but I still think that his own observations, coupled with those of Orfila, indicate a notable shortening of the lower limbs, as compared with the trunk, in individuals who are of shorter stature than the standard of their race. To go back to a very old authority, Homer, in describing Ulysses, says that he was of short stature, but that when he was seated among others this was not observable.

Now it is easier to suppose that the inhabitants of Woodcuts and Rotherley were of short stature by reason of degeneration or selection than that they were a small race *ab initio*, so to speak, in which latter case my argument would fail.

I think, therefore, that calculations based on the length of the femur alone, or of the femur and tibia, in which the relative proportions of these bones in short-statured people are not allowed for, may give results somewhat under the mark. This source of deficiency is partially, however, avoided by General Pitt Rivers, in that he has taken into account also the lengths of the bones of the upper extremity. Still, the objection is not entirely removed.

Another possible source of fallacy lies in the fact that several individuals of both sexes, and in both the Romano-British villages, appear to have been of advanced age, and are noted as being so by Dr. Garson. Such persons may have lost a little of the height which they possessed in the flower of adult age. I believe, however, that the decline in stature which takes place in old people is not usually accompanied by any material shortening of the long bones; the neck of the femur may, it is true, become more horizontal, and thus lessen the apparent length of that bone.

Anyhow, the calculated stature is not increased, in the case of the Woodcuts people, by the subtraction of the aged males, while in the case of the Winklebury Saxons it is positively lessened, the three old men among them having averaged, according to General Pitt Rivers, 5 feet $7\frac{1}{2}$ inches, while my plan brings them up to 5 feet $8\frac{3}{4}$ inches.

At Rotherley, however, the aged men have been really shorter than the others. Let us subtract them, and regard only the six men who were in the prime of life. Their average, as calculated by General Pitt Rivers on Topinard's plan, is only 5 feet $2\frac{1}{2}$ inches.[1] Out of all the numerous schedules contained in my own work on the Stature and Bulk of Man in the British Isles, only one, a collection of Spitalfield weavers, an originally small race dwarfed by progressive degeneration, yielded figures lower than these.

The utmost point to which I can raise the stature of these people, by eliminating the older men, and employing the mode of calculation which is most favourable to them, that from the femur alone, is 5 feet 5·9 inches in the case of Woodcuts, and 5 feet 4·2 inches, in that of Rotherley. This last figure would still be below that of any modern community in Great Britain.

The nine male Saxons, as I have already stated, must have averaged somewhere between 5 feet 7 inches and 5 feet 8 inches.

Here there is no possible room for doubt; all methods of calculation lead to nearly the same result; and this result

[1] I am not sure whether the soft parts have been allowed for: if not, an inch and four-tenths should be added.

agrees very closely with that I have arrived at from a consideration of all the available data, as having been the general average of the old Saxon race. It is also very nearly that which Roberts and Rawson, looking chiefly to the classes whose mode of nurture gives them a fair chance of development, would consider to be the average of the same race in modern times.

I am willing, however, to resign my own proposed method of mensuration; for, though I still think it the best and most easy of application in those numerous cases where the femur alone of the long bones has been preserved or measured, it may well be of inferior merit in such cases as these, where so many of the long bones have been preserved and carefully examined.

Moreover, it has very little chance of general adoption. It is exceedingly desirable that some one system should be universally employed; and the data of Topinard furnish the only probable basis for such a system. It is earnestly to be hoped that he will be able to find time to extend those data and perfect a system.

Meantime, a little ambiguity has arisen, from the fact that the figures in the "Anthropologie Generale" are not in every case consistent,[1] and that they refer to the stature of the skeleton, which, Topinard says, should be amplified by 35 millimeters, or about 1·4 English inch, in order to get the living stature.

I have re-calculated the proportions, allowing the required 1·4 inch for the soft parts in every case, and find that 27 for the femur, 21·7 for the tibia, 19·65 for the humerus, and 14·25 for the radius, are about the figures that should correspond to 100 of living stature, if we neglect the differences of proportion which I conceive to exist between short and tall men respectively.

By the application of these rules I have brought out the following results:—

	From complete lower extremity only.		From the four bones, f., t., h., and r.	
	mm.	inches.	mm.	inches.
Woodcuts, males 7	1648	64·88	1660	65·37
females 6	1537	60·5	1546	60·8
Rotherley, males 11	1577	62·1	1588	62·5
females 3	1489	58·66	1492	58·8
Winklebury, males 9	1721	67·43	1726	67·62
females 5	1618	63·72	1612	63·45
Woodcuts and Rotherley } males 18 ..	1611	63·42	1616	63·62
females 9 ..	1521	59·88	1529	60·2

[1] Pages 474, 475, 1040, 1041. 220, page 475, is a misprint for 202; 20·7 (humerus). page 1041, for 20·0, and 23·3 (tibia), page 1042, for 22·3.

We have therefore a remarkable difference in the stature of the two races of which we have been speaking, a difference which extends to several inches at least, and which occurs in both sexes and is independent of differences of age.

There is, however, no very noteworthy variation in the length of the clavicle (indicating breadth of shoulders), nor in the circumference of the long bones; the British villagers, though much shorter in stature, were scarcely less solidly built than their conquerors; the difference was almost limited to the length of the trunk and members, especially the lower limbs.

This defect of stature in the Britons was no mere accident; else why should it have occurred in both villages, and affected both sexes. Was it a local peculiarity? That could hardly be; and here, I would remark that the Romano-Britons of White Horse Hill, described by Davis and Thurnam, were also short, though taller than our present subjects.

Was the phenomenon in any degree the result of long continued oppression by their rulers, heavy taxation, and consequently scanty food through successive generations; or of the draining away of their tall young men, time after time, for military service?

Both suggestions have been made by General Pitt Rivers, and it seems probable enough that both causes may have been materially operative through several generations.

It will be observed that in both series, especially in the British one, there are instances of an approach to platycnemism.

Other individual peculiarities have been noted in the schedules. One of the most markworthy is the Roman character of No. 8 British skull (Woodcuts). It is very like that of L. Volusius Secundus, figured in the Crania Britannica by Barnard Davis. The skull from the round barrow in "Susan Gibbs's Walk," is a perfectly typical "bronze" one. The disproportion between the parietal radius and arc is very characteristic of this type. Rushmore is situated in a district which up to our own time constitutes a kind of ethnic frontier. The complexion and features of the modern inhabitants seem to indicate that the West Saxons, having settled in force about Salisbury and Wilton, pushed up the diverging river-valleys to Warminster, Tisbury and *Mere*; beyond these points their advance may have been checked for a generation or two; and their subsequent conquests may probably have had less of the character of colonization than of military and seignorial occupation. The most prevalent types further west, as at Gillingham and Wincanton, are certainly not Saxon. It will be of the greatest interest to determine, now that we know Bokerley Dyke to be

post-Roman, whether the modern lines of race-division correspond to the lines of the ancient earthworks.

Further notes on Proportion and Stature.

Since this paper was read, I have examined a good deal of material bearing on the question of the uniformity of proportion of the length of the long bones to the stature. The results are more curious than satisfactory.

Dr. Etienne Rollet, of Lyon ("Mensuration des os longs des membres") having measured 50 male and 50 female corpses, comes to the conclusion that among males the long bones are proportionally *shorter* in tall persons, while among females the lower extremity only is longer.

He, however, quotes Sappey, who in a series of 40 males and 30 females found the proportional length of the lower extremity distinctly greater in tall persons. in both sexes; and Collignon, whose figures agree with Sappey's.

Rollet's method of calculation, which differs from Topinard's, brings out, from the femur and the humerus, a stature of only 5 feet 1·55 for the Rotherley men, and 5 feet 4·7 for those of Woodcuts.

I have also gone over the measurements of Weisbach, in the report of the Novara expedition, hoping to gain some further light on the subject of proportions from his measurements of the lower extremity. He measured from the trochanter to the external condyle for the thigh, and thence to the external malleolus for the leg. I have added together the lengths of the leg and thigh, and taken their proportion to the stature; it is not very different from our leg-index, roughly speaking.

The results in 30 German men and 11 German women show an increasing leg-index with increasing stature. In 20 Slav men and in 10 Rouman men, on the contrary, there is a slight decrease.

In Nicobar men, of whom Weisbach had a large number (51), there is scarcely any difference, and the same is the case with the Bugis; if anything, the indication is one of decrease. On the other hand, in Amboyna men, in Javanese, both men and women, in Sunda women, and in Tahitian women, there is a very considerable increase of leg-index with increasing stature; and the Chinese seem to fall into the same class.

But by far the most extensive series of measurements bearing on that point is that in the Anthropometric Manual of Amherst College, by Drs. Hitchcock and Seelye. From 888 measurements we gather that in the American student the leg-index does increase in the direct ratio of the stature, but it would

seem that this increase is due mainly to the greater proportionate length of the tibia rather than of the femur. In young men from 160 to 167 centimeters in stature, the leg-index is only 46·6, in those from 168 to 175 it is 47·, in those from 176 to 183 centimeters, inclusive, it is 48. The pubic heights (49·9, 50·5, 50·4) and the umbilical heights (59·3, 59·8, 60·2) confirm the indications of the leg-index.

On the whole, then, it may be said to be the rule that the leg-index does increase in the direct ratio of the stature; but the exceptions are numerous. Is it a mere accident that most of the exceptional series occur among the brachycephali of central Europe (the Celts of Lyon, the Slavs, the Roumans)?

Discussion.

Mr. F. Galton feared that the risk of error would be large in endeavouring to identify the race to which skeletons belonged from the statures of a few specimens. Stature was known to be largely dependent on nurture, as shown by the great difference between that of the artizan and of the professional class in our own country, and again by the present large number of very tall English women, much in excess of what used to be observed, due apparently to the more healthy condition of female life in modern times among the well-to-do classes. The varieties in the value of mean stature had also been strongly forced upon his notice during several recent enquiries into different groups. They would probably be no less conspicuous under the rude conditions in which the people existed who were spoken of by Dr. Beddoe. He had witnessed a remarkable degree of variety among the Damaras, of whom some had cattle and lived plentifully on milk; these were magnificent men, frequently exceeding 6 feet 2 inches. The remainder were very poor; they had no cattle of their own, but lived chiefly on such roots as they dug up, or on other chance means of sustenance, and were far less tall. The statures of a few skeletons dug up in Damaraland could not, he was sure, be trusted to tell much about the race to which they belonged.

Prof. Flower and Prof. Thane also joined in the discussion.

Dr. Beddoe, in reply, expressed his satisfaction at the result of Prof. Humphrey's investigation, as reported by Prof. Thane. If the angle of the femur did not really become less open in old people, a considerable addition to the material belonging to the early races, and available for measurement, would be made.

The following paper was then read by the Author:—

A DEMONSTRATION *of* CENTRES *of* IDEATION *in the* BRAIN *from* OBSERVATION *and* EXPERIMENT.

By BERNARD HOLLANDER, Esq.

ON the 22nd February, 1887, Prof. David Ferrier delivered an address in this room on the question, "How far recent investigations on the functional topography of the brain could be brought in relation with craniological and anthropological researches with a view to establish the foundation of a scientific phrenology." It is my object to-night to continue that discussion, and to submit to you the basis of a scientific phrenology for your examination and criticism. I take it for granted :—

1. That all mind-manifestation is dependent on brain-matter;
2. That the various elements of the mind have distinct seats in the brain—which, however, have not been as yet determined;
3. That the recent researches by physiological experimenters and pathological investigators—which have resulted in defining distinct regions for motion and sensation—established the physiological correlative of psychological actions.

By applying galvanic currents to definite portions of the brain, or by destroying certain areas, physiological experimenters cause movements of certain limbs and muscles. In itself the distribution of motor areas in the brain would be of little value to the psychologist except that it proves to him the plurality of functions of the brain. When, however, we observe that the movements caused by excitation form the physical parallel of a mental action, we may arrive at the psychological function of a certain portion of brain, by reducing the various faculties of the mind to their elements, and watching their physical expression. No galvanic current will ever have the effect of demonstrating a centre of ideation, say : the centre for the emotion of power; on the other hand, there are several emotions and all the higher intellectual operations, which have no outward physical signs. All, which the excitation of that portion of brain, where the emotion of power may have its centre, can effect, is certain movements which such an emotion would cause when irritated.

To arrive then at the demonstration of centres of ideation there is but one way :—

1. We must observe the physical expression of our thoughts and feelings, as far as possible; in other words, we

must study the outward visible signs of their manifestation;

2. We must take the limbs and muscles, which are affected by definite emotions, and see on what occasions they are made to move by central excitation.

Let me give an example. The outward sign of a joyful emotion is a drawing up of the corners of the mouth. The elevation of the angles of the mouth is the muscular action going parallel with the emotion of joy. The excitation of the nerve-centre causes the elevators to act. There is but one definite area, from which the elevator muscles can be made to act, therefore joyful emotions must take their start from this centre. When then a joyful emotion excites this definite portion of grey matter, a nerve-current passes to the lower centre—the centre for the movements of the elevator muscles—and causes them to act. As the brain is a very complex machine, other effects may be produced at the same time, but this one has always been associated particularly with exhilarating emotions. Persons of very cheerful dispositions make the elevators act so frequently, that the mechanism of the nerve-display is facilitated by constant use, and the centre will easier appreciate these special impressions. The elevators will be in time so accustomed to act, that they will leave impressions on the face so marked to enable people to recognise, by mere physiognomical signs, their brethren, who are of such disposition.

Now, let us see what the actual experiments were.

Prof. Ferrier applied a galvanic current to the ascending frontal convolution in monkeys on a definite portion marked (7), and to the corresponding region in dogs, jackals, and cats, all with the effect of elevating the cheeks and angles of the mouth with closure of the eyes. On no other region could the same be effected.

Darwin ("Expression of the Emotions," p. 202, &c.) says:—

"Dr. Duchenne repeatedly insists that under the emotion of joy, the mouth is acted on exclusively by the great zygomatic muscles, which serve to draw the corners backwards and upwards. The upper and lower orbicular muscles are at the same time more or less contracted. A man in high spirits, though he may not actually smile, commonly exhibits some tendency to the retraction of the corners of his mouth. According to Sir Chas. Bell, in all the exhilarating emotions the eyebrows, eyelids, the nostrils, and the angles of the mouth are raised. The tendency in the zygomatic muscles to contract under pleasurable emotions is shown by a curious fact communicated to me by

DIAGRAM

OF CRANIO-CEREBRAL RELATIONS.

(Reid.)

Some of the results of

Observations

made by the early phrenologists.

a. Hope.
The organ of cheerfulness.

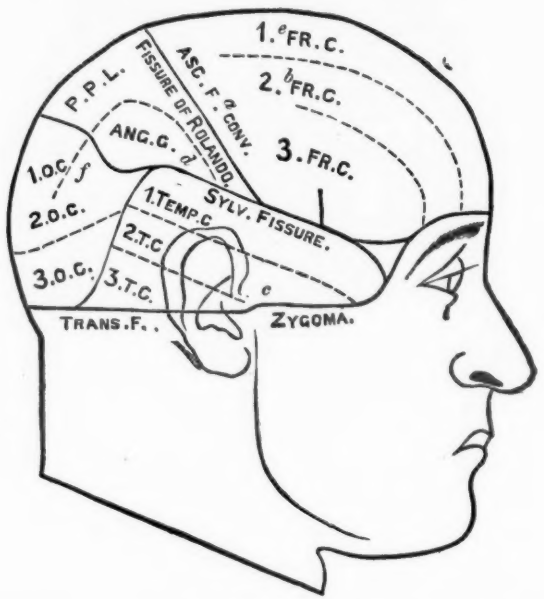
b. Imitation.
The organ of mimicry.

c. Alimentiveness.
The gustatory organ.

d. Cautiousness.
The organ of circumspection, fear, timidity.

e. Veneration.
The organ of submission, respect, devotion.

f. Attachment.
The organ of friendship.



Some of the results of

Experiments

made by modern physiologists.

a. Centre for the movements of the *Elevator Muscles.* (Elevating the cheeks and angles of the mouth.)

b. Facial Nerve Centre.
Centre for facial movements.

c. Gustatory Centre.

d. Centre for movements of the *Platysma myoides,* the muscle of fright.

e. Centre for movements of the arm and raising of the shoulders. *Patience Muscles.*

N.B.—Some of the reference-letters have not been engraved exactly in their proper positions. The *d* should be placed rather lower down; and the *e* should stand on the left, instead of the right, of figure 1.

Dr. Browne with respect to patients suffering from general paralysis of the insane: 'In this malady there is almost invariably optimism—delusions as to wealth, rank, grandeur—insane joyousness, benevolence and profusion, while its very earliest physical symptom is trembling at the corners of the mouth and at the outer corners of the eyes. This is a well recognised fact.'"

We have then sufficient evidence that the effect produced by galvanic current on the portion of brain marked (7) in Ferrier's topography is the physical expression of joy. We know then for positive that pleasurable emotions excite this centre. But I do not say, that it is the function of the centre to produce an emotion of joy—a manner after which the old phrenologists would have expressed themselves—I merely note that all pleasurable emotions produce a nerve current, which takes its start in this region.

Sir Crichton-Browne tells us, that in general paralysis of the insane, there is invariably optimism, beginning generally with trembling at the corners of the mouth and the outer-corners of the eye. The old phrenologists located "hope" in this region, and there is, no doubt, a strong relation between hope and optimism, and I find, in the writings of Combe, frequent allusions that this organ gave a tendency to cheerfulness. At the same time, I must note that Gall, the founder of phrenology, did not admit "hope" as a faculty, but included this portion of brain in his organ of "imitation" or "centre for mimicry," of which I shall speak directly.

There are many defects in the old phrenological system; one of them being that it rather favoured complex functions. But all the same, an unprejudiced investigator must take their observations into consideration. I need not remark that, when I refer to phrenology, I mean only the observations of Gall, and not the fancies and fallacies of his followers.

This centre for the elevator muscles, and probable centre, from which exhilarating emotions take their start, is in close connection with Exner's centre for the facial nerve.

Ferrier's centre, No. 7, is a little lower than the centre for the "nervus facialis" as located by Exner ("Localisation der Functionen in der Grosshirnrinde des Menschen," Wien, 1881). The "nervus facialis" centre occupies a very large portion of brain in Exner's collection of pathological evidence. The most intense centres for facial movements are localised by him in the squares marked 57, 58, 65, but are said to extend actually from the gyrus centralis anterior to the latter halves of the lower frontal convolutions. He quotes many cases of disease of this nerve, and is particularly struck with the frequency with which disease

of the facial nerve and aphasia concur. He says (p. 56), it cannot be mere chance that paralysis of the facialis is frequently accompanied by aphasia and the reverse: an observation which was also made by Ferrier.

There is sufficient evidence that the centre for the facial movements occupies an area extending from the ascending frontal convolution to the middle frontal convolution—a fact which was noted by Gall. He located in this region the talent for mimicry, the talent of imitating the gestures of other people; more than this, he noted that, when this region was prominently developed, there was not only a talent for mimicry, but also a talent for the imitation of the voice of other people, and many examinations and casts of heads of eminent actors were made to prove this theory.

We have heard from Exner and Ferrier how closely the speech and facial nerve centres are connected; both in perfection being necessary for a clever actor. But let me quote Gall himself. Speaking of a man with a peculiar prominence of this region, he says:—

"He imitated in so striking a manner the gait, the gestures, the sound of the voice, &c., that the person was immediately recognised. I hastened to the institution for the deaf and dumb to examine the head of the pupil Casteigner, who had been received into the establishment six weeks previous, and who, from the first, had fixed our attention by his prodigious talent for imitation. On Shrove-Tuesday, when a little theatrical piece is usually represented in the establishment, he had imitated so perfectly the gesture, the gait, &c., of the directors, inspector, physician, and surgeon of the institute, and especially of some women, that it was impossible to mistake; a scene which amused the more, as nothing like it was expected from a boy whose education had been absolutely neglected."

He goes on to explain that many men have a natural talent for the stage or pantomime, and that the history of the lives of great actors shows, that the majority of them had received little education and were intended for some other profession, but their innate disposition drove them to the stage. The faculty of imitation is exercised sometimes even in idiots and madmen. Pinel says:—

"A young idiot whom I have long had under my eye, has the most marked and irresistible inclination to imitate all that she sees done in her presence; she repeats mechanically all that she hears said, and imitates with the greatest fidelity the gestures and actions of others, without much regard to propriety."

I cannot go into details to-night as to the ample evidence, pathological and otherwise, which the early phrenologists brought

forward in their time. They were only ridiculed and treated as charlatans. To-day people know nothing of the old phrenology, except what they hear from opponents and read in books by some phrenological dilettanti. Scientific men think Gall's theory exploded, because Sir Wm. Hamilton and Flourens appeared to disprove it, but we know, since 1870, that the doctrines of these two men are equally valueless, for Flourens taught that the whole brain acted as an organ of the mind and not, as we know now, that special parts of the brain have separate functions, while Sir Wm. Hamilton considered it impossible to form a system on the supposed parallelism of brain and mind. L. Landois ("Lehrbuch der Physiologie") recommends a re-examination of Gall's theories, and I hope to show you to-night that, whatever you may think of the phrenological system, Gall's fundamental observations were correct.

Ferrier's experiments on monkeys on the anterior and inner aspect of the uncinate gyrus, marked (15), had the effect of "torsion of the lip and semiclosure of the nostril on the same side, as when the interior of the nostril is irritated by some pungent odour." He says (p. 244, "The Functions of the Brain," London, 1886):—

"Irritation of the middle temporo-sphenoidal convolution I have found in general to be without any obvious reaction except towards the lower extremity, where in several instances movements of the tongue, cheek pouches, and jaws were induced very much like those which are characteristic of tasting."

The same experiment on (15), the uncinate gyrus or extremity of the temporal lobe of dogs had the result of "torsion of the nostril on the same side, as if from irritation directly applied to the nostril." The same effect was produced by experiments on cats and other animals. He continues:—

P. 315. "As above described, irritation of the hippocampal lobule in the monkey, cat, dog, and rabbit was attended by essentially the same reaction in all, viz., a peculiar torsion of the lip and nostril on the same side. This reaction is precisely the same as is introduced in these animals by the direct application of some strong or disagreeable odour to the nostril, and is evidently the outward or associated expression of excited olfactory sensation."

P. 321. "As to the sense of taste I have not succeeded in differentiating any special region related to this faculty, but that it is in close relation with the olfactory centre is probable from the facts described. It was noted in connection with electrical irritation of the lower extremity of the temporo-sphenoidal convolutions in the monkey, and of the same region in the brain of the cat, that movements of the lips, tongue,

cheek-pouches, and jaws, were occasionally induced—phenomena, which might be regarded as indications of the excitation of gustatory sensation. This interpretation receives support from the above described results of destructive lesions, and we have, therefore, reasonable grounds for concluding that the gustatory centres are situated at the lower extremity of the temporo-sphenoidal lobes, in close relation with those of smell."

P. 431. "The physiological needs of the organism, in so far as they induce locally discriminable sensations, express themselves subjectively as definite appetites or desires, which are the conscious correlations of physiological wants. The appetite of hunger is the desire to satisfy or remove a local sensation, referable to the stomach, in which the physiological needs of the stomach express themselves. The substrata of the feeling of hunger and appetite for food are the stomachic branches of the vagus and their cerebral centres, and as local conditions of the stomach may destroy or increase the feeling of hunger, so central disease may give rise to ravenous appetite or sitophobia, conditions exemplified in certain forms of insanity."

Ferrier thus proves the tip of the lower temporal convolutions to be the "gustatory centre," and even Hitzig, who is not always flattering to Prof. Ferrier, delights in noting this discovery. Yet, I will show you immediately that this centre—of which we are most certain—was known and correctly localised in the same portion of brain by the early phrenologists.

Many men claimed the discovery of the organ called "gustativeness," or "alimentiveness," but the Editors of the "Edinburgh Phrenological Journal," Vol. 10, p. 249, give Dr. Hoppe of Copenhagen the credit of having been the first and most acute observer.

"In December, 1823, he expresses the opinion, that besides the nerves of the stomach and palate, of which alone he conceives the sensations of hunger and thirst to be affections, there must be also an organ in the brain of animals for the instinct of nutrition for the preservation of life, which incites us to the sensual enjoyments of the palate, and the activity of which is independent of hunger and thirst."

In a second communication to the same journal, dated 28th December, 1824, he says :—

"Regarding the organ for taking nourishment, I have been led to think, since I wrote last, that the place where its different degrees of development are manifested in the living body is in the fossa zygomatica. Before I had thought at all of phrenology I was struck with the remarkable breadth of the face or head of a friend of mine, caused, not by prominent

cheekbones, as in some varieties of mankind, but more toward the ears, by the great convexity of the zygomatic arch. Knowing that this individual was exceedingly fond of good living, and that, even in spite of a very powerful intellect, and propensities moderate in almost every other respect, he was prone to indulge too freely in the joys of the table, I afterwards thought that this form of the head and tendency of the mind might bear a nearer relation to each other than had at first occurred to me, and in some other persons, notoriously fond of good eating and drinking, I found a confirmation of my suppositions. This prominence of the bony arch, I think, must be an absolute consequence of the part of the cranium lying under the temporal muscle being pushed outward, and diminishing, in that direction, the space of the fossa."

Dr. Hoppe considered the organ "alimentiveness" to be likewise the organ of taste. He says:—

"That the sensation of taste only passes through the nerves and is perceived in a part of the brain is a supposition, I think, sufficiently proved. Now, it appears to me as highly probable, and by analogy agreeing with other experience, that it is one and the same organ which tastes, viz., distinguishes and enjoys, and incites us to taste, or in other terms, to take food and drink. This, according to my opinion, is the organ of appetite for food and consequently it may be named the organ of taste, gustus."

Dr. Crook, of London, mentions that several years before the publication of Dr. Hoppe's papers, he himself had arrived at similar conclusions with regard to this faculty and the position of its organ. He says:—

"Three persons with whom I had become acquainted in the year 1819, first led me to suspect that a portion of brain situated near the front of the ear, was connected with the pleasures of the festive board. From that time to the end of 1822 above a thousand observations were made. As they tended to confirm this view, several phrenological friends were informed of the result. From 1823 I no longer doubted that the anterior portion of the middle lobe was a distinct organ, and that its primary use was the discrimination and enjoyment of meats and drink. It was difficult, however, to hit the fundamental power. The situation of the organ, under the zygomatic process and the temporal muscle, frequently precluded the possibility of accurate observation. But, notwithstanding, well-marked cases, both of a positive and a negative kind, were investigated."

A long controversy follows this paper on "alimentiveness," the gustatory centre, in the "Phrenological Journal," and much ridicule was thrown at the originators for localising a centre for

hunger and thirst, those affections being thought due to the stomach alone. Even to-day scientific men say phrenology is exploded, because certain thicknesses in the skull and the various muscles make it impossible to distinguish the corresponding portions of brain; yet it is remarkable that the organ which has been ridiculed most and which was the most difficult to observe, is to-day found correct.

If there were but two organs correctly localised by Gall, it would justify a reconsideration of his work; but there seems to be a number of faculties, the localisation of which has been confirmed by modern experiments. Unfortunately the later phrenologists have spoilt many of Gall's original observations. I will just give a few more examples in order that my paper may receive sufficient consideration, and may effect a change in your views with regard to the old phrenology.

Prof. Ferrier's experiments on "the lower extremity of the ascending parietal convolution" in monkeys marked (11), resulted in "retraction of the angle of the mouth. The action is that of the platysma myoides."

Darwin ("Expression of Emotions," p. 298), says with regard to the physical expression of "fear," and the platysma myoides muscle:—

"Sir Charles Bell ('Anatomy of Expression,' p. 168) and others have stated that this muscle is strongly contracted under the influence of fear, and Duchenne insists so strongly on its importance in the expression of this emotion that he calls it the muscle of fright."

This may perhaps suffice to show that the platysma myoides muscle is called into action in the expression of fear.

Now let me draw your attention again to the old phrenology. Gall located so-called "cautiousness," in an area which covers not only Ferrier's centre (11), but also the angular gyrus. He found an enormous development of this region in persons known for their timidity, persons known to take alarm easily, and who could be easily terrified.

As to the function of the angular gyrus physiologists are not agreed. Ferrier includes the gyrus in his centre of sight. Munk calls it "Seelenblindheit," a strange name with a still stranger meaning.

I will quote some passages, which seem to indicate, that the effects produced by lesion of this region have some connection with the function attributed to it by phrenologists.

Ferrier, Phil. Transactions, 1875, Part II, p. 445–51, Resumé: "After destruction of the angular gyrus the animal commences to feel about cautiously; if pushed to move, it runs against every obstacle on its way. If put on the floor, it cries out and looks

about quite frightened. If called, it points its ears and cries. If taken up again, it clings to one as if afraid of being put down. On the other hand, threatening with the stick has no effect, unless the stick is brought in contact with the eyes."

Munk ("Functionen der Grosshirnrinde," p. 25, etc.) makes the same observations as Ferrier, only his region of destruction, marked A, includes a portion of brain, where Gall located his organ of "Friendship" or "Attachment" (see diagram, p. 19) and Munk, speaking of the effect, says: "However, the animal remains cold at the sight of men, whom it used to greet most friendly, and, even at the sight of dogs, with whom it used to play:" an effect, which can be easily explained on phrenological principles, by the loss of the organ of "attachment" or "friendship." He goes on to remark, that the whip, which formerly frightened the animal away to a corner, has now no effect. The animal stops before every obstacle on its path and turns back again; one has to push it to go up any steps, and then, it feels its way with its nose, though not blind. When recovering, it stares at everything and examines every object most cautiously, both when lying down and walking about, just as if it had to learn afresh and gain new experience.

Goltz ("Verrichtungen des Grosshirns," p. 18, &c.) says, it is a well-known fact, that animals are easily put into rage by the appearance of a person in strange costume. He got his servant dressed up in fantastic attire and his dog would have torn him to pieces, had not proper precautions been taken. When the dog, however, had been operated upon, and the experiment was repeated, he remained perfectly calm, even when the servant stepped quite close to him, though the animal was by no means blind.

It is not difficult to detect in all these experiments an affection of some faculty, which, when excited, causes timidity. What the element of that faculty is, I cannot tell, but in its actions it is concerned with the emotion of fear.

Professor Ferrier found, when experimenting on dogs and other animals on a portion of brain marked (5), which corresponds to "the ascending frontal convolution at the base of the superior frontal" in the human brain, elevation of shoulder and extension forwards of the opposite fore-limb, or flexion of the fore-arm and paw.

Now, according to Darwin, raising of the shoulders—sometimes accompanied by extension of the arms—is a sign of non-resistance. He inquires, p. 271:—

"Why men in all parts of the world when they feel—whether or not they wish to show this feeling—that they cannot or will not do something, or will not resist something if

done by another, shrug their shoulders, at the same time often bending in their elbows, showing the palms of their hands with extended fingers, often throwing their heads a little on one side, raising their eyebrows, and opening their mouth."

On p. 270 he says:—

"Shrugging the shoulders likewise expresses patience or the absence of any intention to resist. Hence the muscles which raise the shoulders are sometimes called, as I have been informed by an artist, the patience muscles."

Mantegazza ("La physionomie et les sentiments," p. 113, &c.) dwells on the importance of the movements of the arm in the act of submission, devotion, and veneration. Darwin doubted whether the kneeling posture with the hands upturned and palms joined is an innate expression of devotion, but rather thought this posture a sign of submission. Mantegazza differs from Darwin; he holds that it is from the habit we have from our childhood to join our hands for prayer, that we employ the gesture when appealing to human beings, who can do us either much good or great harm. He thinks this gesture is innate and not acquired. He questioned many artists and gives as the result distinct rules, showing the importance which the position of hand and arm play in the expression of veneration and devotion.

We know then, that the raising of the shoulders together with the bending of the arms and hands are concerned in the physical expression of submission or non-resistance.

The old phrenologists located in this region their organ of "veneration," which is to give an impulse to devotion and worship. Combe ("System of Phrenology," p. 212) says:—

"Children who are prone to rebellion, regardless of authority, and little attentive to command, will generally be found to have this organ deficient. Veneration leads to deference for superiors in rank as well as in years, and prompts to the reverence of authority."

Large "veneration," say the phrenologists, produces an instinctive feeling of respect; a defect of "veneration" has the effect of diminishing the reverence for power. Dr. Spurzheim called it the emotion of reverence and respect.

We see again the strong relation between the old phrenology and the results of the experiments of modern phrenology. On the one hand I have shown you, that the effect produced by Ferrier's faradisation is the natural language of a feeling of non-resistance; on the other, that observations of Gall resulted in ascribing to this portion of brain the seat of the emotion of respect and reverence. Of course, respectful people do not resist authority.

Gall appears to me to have been aware of the importance, that the study of the physical expression of our emotions and thoughts will play some day, and to have been expecting that this study of the physical parallel to our mental operations will furnish new evidence for his or any other system, built upon the parallelism of brain and mind. He devotes a chapter to pathognomy, of which the following extract may prove interesting:—

"This art is founded on nature herself; for it is nature, that prompts all the gestures, the attitudes, the movements, finally the whole mimicry, by which men and animals express all their feelings and ideas. Pathognomy has its fixed and immutable laws, whether we apply it to man or to animals, so long as the question relates to the same feelings and the same ideas. Pathognomy is the universal language of all nations and of all animals. There is no beast or man who does not learn it; there is no beast or man who does not understand it. It accompanies language and strengthens its expressions; it supplies the defects of articulate language. Words may be ambiguous but pathognomy never is so. What would become of engraving, painting, sculpture, the comic art, eloquence, poetry, if the expression of the sentiments and ideas were not subjected to immutable laws? What means would they have in their power to paint modesty, prudence, fear, despair, baseness, joy, anger, contempt, pride or devotion? Where is the animal or man who takes time to deliberate on the manner, in which he would make his feelings and his ideas understood by others? Even at the moment when the feelings and the ideas arise, they are written on the exterior in characters discernible by all the world. It is certain, therefore, that the feelings, ideas, affections, and passions are manifested by suitable expression according to determinate and invariable laws."

Gall noted the physical expressions of our emotions, though he could give us no explanation of its cause.

With the assistance of Hitzig, Fritsch, and Ferrier's experiments on the one hand, and Gratiolet, Piderit, Darwin and Mantegazza's observations on the other, I have endeavoured to show you to-night: (1) the reason why certain muscles and limbs are called into action by certain feelings and emotions; and (2) how to demonstrate centres of ideation by comparing the physiological experiments with pathognomy.

My work is, however, not complete, for first of all, I have not attempted to find the elements of those faculties which I located; secondly, we must take into consideration that mind, like brain, is very complicated, and even had philosophers ever agreed as to its elements, we know from experience that an emotion seldom acts singly.

Like all novelties my paper will create some opposition, but I do not fear criticism: I only ask for a re-examination of Gall's work, which I believe has been rejected without due consideration.

Discussion.

Dr. Beddoe thought that, although phrenologists had erected an edifice of straw and rubbish on the foundations laid by Gall and Spurzheim, these last had been men of considerable power and acuteness, whose observations ought not to be neglected in any new attempts at the localization of faculty.

Dr. Ferrier remarked that as the relations between brain and mind were still in many respects very obscure, he cordially welcomed any attempt to throw light on the problem. So far the physiological or objective functions of certain cerebral regions had been determined, but the question was, what are the correlations between the objective and the subjective or psychological aspects of these same regions. As the brain was composed of sensory and motor substrata, and as the brain was the organ of ideation, therefore ideation was the functioning of centres whose objective functions were motor and sensory. That there was a relation between the development of certain regions and certain motor and sensory faculties and capacities was undoubted, and was amply proved by the facts of comparative anatomy and physiology, normal and morbid. But whether any particular centre could be taken as the index of any particular intellectual faculty or peculiarity was a totally different matter. For the same centre might be called into activity in connection with unnameable mental states. Of which, then, would it be the index? Mr. Hollander's speculations in reference to so-called phrenological doctrines were ingenious, but what we wanted was evidence founded on careful investigation according to strictly scientific methods serving to indicate a relation between the development of particular centres and special mental faculties, aptitudes, or peculiarities. At present he did not think that there was any such worthy of consideration, beyond the general indications above mentioned. But the subject was one which was worthy of careful study, and in scientific phrenology might one day become possible.

Mr. Wakefield said that as men's minds undoubtedly differed from each other in their natural characteristics so, it might be presumed, did also the physical organs through which mind manifested itself. Was it possible to detect these differences? Were there, also, localised centres of action corresponding to certain faculties or powers of the mind? This was the problem for solution and demonstration. Some facts had come under his observation which led him to think that the solution was not hopeless; but the advance made in this department of knowledge as to the true relation of mind and body was but slow and uncertain.

Mr. G. BERTIN remarked that it had been ascertained that the faculty of sight was localized in a convolution of the posterior part of the brain, and as we know that the faculty of speech is localized in the third left frontal convolution, it would seem that modern discoveries disprove the assumptions of the phrenologists. One great mistake of their system is to attribute the same faculties to the two lobes of the brain, a fact disproved by the localization of the faculty of speech on the left side. Another thing lost sight of, is that the examination of the head could only show the development of the surface of the brain; while we have no means to detect its inner development. Nor must we forget that the skull does not change after a certain age, though faculties may be still developing. Another mistake of phrenologists is to localize faculties too much; if phrenology is to become a science, broader lines will have to be followed, and Mr. Hollander's careful researches will do much to further this object.

Professor THANE and Dr. EDRIDGE-GREEN also took part in the discussion.

Mr. HOLLANDER in reply, observed that nobody disputes the fact that there are brain centres for ideation; the question is only as to their localization. But as the objective side, *i.e.*, the physical correlative of mental manifestation, has been in many cases successfully established, there remains but the demonstration of the subjective side. How far the speaker had succeeded in this, may be judged when the paper is read in type. So far he had not excited opposition. But now comes the coincidence that some of Professor Ferrier's researches, especially on the gustatory centre, confirm the early phrenological observations, long ago rejected. By careful examination and a thorough study of Gall's works the speaker found that there was a sound basis to his system. Gall had extraordinary powers of observation, and was an expert in comparative anatomy. He noticed the resemblance between the skulls of murderers and the skulls of carnivorous animals; the predominance of the temporal lobe struck him, and both Professor Benedict and Lombroso—the authorities on criminal anthropology—testify as to its correctness. Gall, in the same manner, noticed peculiarities in the heads of actors, poets, musicians, &c. He reasoned that there must be in the case of murderers an organ giving an impulse to destroy or kill ("destructiveness"), in the case of mimics an organ giving an impulse to imitate ("organ of imitation"), &c. Now these deductions are open to criticism, but the original observations are beyond dispute. There are no two characters alike, neither are there two skulls alike. The question in both cases is: how to measure the differences. There is no instrument for the measurement of those "ups and downs," protuberances and depressions of the living head. Between the skull of a Goethe and that of a murderer there are innumerable varieties. As we are able to distinguish the two extremes, why

should we not succeed in demonstrating the intermediate stages. Gall's system was rejected at its first appearance, because it threatened to upset familiar notions about the liberty of the will, about special creation, and supernatural religion. This was the first obstacle, and very few men, even now-a-days, care to risk the danger of opposing popular opinion. The author had attempted a revival of Gall's system, more scientific and appealing to the learned only. He hoped that it would be received without prejudice.

FEBRUARY 26TH, 1889.

JOHN BEDDOE, Esq., M.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The election of JOHN GOLD PHILPOT, Esq., of Lyme Regis, was announced.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the AUTHOR.—Ein neuer Schädelträger und Schädelmesser. Von Dr. Josef Mies.

—— Zusätze zu den Erklärungen der einliegenden linearen Darstellung von Schädel-und Gesichts-Indices. Von Dr. Josef Mies.

—— Beschreibung und Anwendung eines neuen kraniometrischen Instrumentes. Von Dr. Josef Mies.

—— Demags kapabomas mäl ko vödem plänöl, al plösenön gleglupis kotefamanumas lonedas gletikün al vids gletikün e lonedas gletikün al geils segun, balam bevünetik de Frankfurt', fomü posdunots seaseitlik fol. Fa dl. Mies.

—— O Góralach Ruskich w Galicyi. By Prof. Dr. I. Kopernicki.

From the CURATOR OF THE CAMBRIDGE UNIVERSITY MUSEUM OF GENERAL AND LOCAL ARCHÆOLOGY.—First, Second, Third, and Fourth Annual Reports of the Antiquarian Committee to the Senate, 1885–1888.

From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—Archiv für Anthropologie. Band xviii. P. 3.

—— Correspondenz-Blatt. 1889. Nr. 1, 2.

From the ASSOCIATION.—Journal of the East India Association. Vol. xxi. No. 1.

From the INSTITUTION.—Journal of the Royal United Service Institution. No. 146.
From the SOCIETY.—Proceedings of the Royal Society. No. 275.
—— Journal of the Society of Arts. Nos. 1891, 1892.
—— Bulletin de la Société d'Anthropologie de Lyon. Tome vii. No. 3.
From the EDITOR.—Nature. Nos. 1007, 1008.
—— American Antiquarian. Vol. xi. No. 1.
—— Science. Nos. 313, 314.
—— Timehri. No. 14.
—— Revue Scientifique. Tome xliii. Nos. 7, 8.

EXHIBITION *of* INSTRUMENTS (1) *for* TESTING PERCEPTION *of* DIFFERENCES *of* TINT, *and* (2) *for* DETERMINING REACTION-TIME.

By FRANCIS GALTON, ESQ., F.R.S.

1. *Instrument for testing the perception of differences of Tint.*

Mr. F. Galton exhibited a new instrument designed by himself. It was a long box blackened inside, that had a horizontal slot at one end, A, to look in at, and two square windows B_1 B_2 at the other end, B to look out at. The box is directed towards a screen of white paper easily illuminated, so that the observer looking through A sees two bright windows in front of him, all the rest being dark. His eyes are well shaded by three wings attached to the box at A, one above, and one at either side.

The upper part of the end of the box towards B is hinged and can be turned back; then two graduated wheels D_1 and D_2 are disclosed. They turn independently on the same axis which is fixed through the horizontal partition that divides the wheels. Each wheel carries a light frame set across its diameter at right angles to its face. Similar gratings G_1 G_2 of fine wire (or else slips of coloured glass) can be inserted into these frames. Thus the piece consisting of D_1 and G_1 is exactly similar to that consisting of D_2 and G_2, but the two pieces are placed in opposite aspects, D_1 and D_2 being on different sides of the partition, and G_1 and G_2 standing outwards from them respectively. The wheel D_2 can be set by the experimenter in any desired position, and D_1 can be rotated by the person who is being tested, whenever he pleases to turn a stud S, with which D_1 is connected by a string.

Now when the grating (or the glass) is inclined to the line of sight, less of the light from the screen that passes through the

corresponding window reaches his eye than when it is set more squarely. Therefore the brightness of the two windows cannot be the same unless the graduations on D_1 and D_2 correspond in position.

To perform the test:—Open the hinged end at B; set D_2 to any desired angle; close the hinged end. The person to be tested now looks through A, and turns the stud S until he has to the best of his judgment matched the tint of the window B_1 with that of B_2. Then the operator opens the hinged end and reads off the difference, if any, in the position of D_1 and D_2.

(The precise value to be assigned to each degree of difference of graduation under the most suitable test conditions, has not yet been calculated, the instrument being still in an experimental stage).

2. *Instrument for determining Reaction-time.*

This instrument, also designed by Mr. F. Galton, measures the interval between a Signal and the Response to it, by the space traversed by an oscillating pendulum when measured along a chord. The pendulum is always released at the same angle of 18° from the vertical, and the graduations are made on a chord of the arc through which it swings, situated at a vertical distance of 800 millimetres from the point of suspension. In this case, the length of the half-chord, or of $800 \times \tan 18°$, is equal to 259·9 millimetres. The graduations show the space travelled across from the starting point, at the close of each hundredth of the time required to perform a single oscillation. The places for the alternate graduations are given in the subjoined table, which has been calculated for the purpose, and may be useful in other ways, but the times to which the entries there refer are counted from the vertical position of the pendulum, and are reckoned up to $-$ 50 on the one side, and to $\times$ 50 on the other. The value of the decimal is only approximate; it had, in many cases, to be obtained by graphical interpollation. The pendulum is made to beat seconds, so the graduations are for hundredths of a second.

A pendulum must have considerable inertia in order to keep good time; on the other hand it is impossible to give a sudden check to the motion of a body that has considerable inertia without a serious jar. Therefore it is not the pendulum that has to be suddenly checked in this apparatus, but a thread that is stretched parallel to it, by an elastic band both above and below. As the pendulum oscillates the thread swings with it, and the thread passes between a pair of light bars that lie just below the graduated chord and are parallel to it. On pressing a key these bars revolve

round an axis common to both, through a little more than a quarter of a circle. They thus nip the thread and hold it tight, while no jar is communicated to the pendulum. The signal either for sight or for sound is mechanically effected by the detent at the moment when it is pushed down to release the pendulum. The pendulum may also be released, without giving any signal. In this case a sight signal has afterwards to be produced by causing the pendulum in its course to brush against and slightly to turn a very light and small mirror, so as to throw on or off the reflection of a window. A sound signal is similarly made by causing the pendulum to carry a light weight against a hollow box, which strikes the weight off. Neither of these acts produce any sensible alteration in the swing of a heavy pendulum.

TABLE.

T = the time of a single oscillation. Angle of oscillation 18° on either side of the vertical. The distances are measured upon a chord that lies 800 millimetres vertically below the point of suspension. The decimals are only approximately correct.

$\frac{T}{100}$	Distances from vertical.	$\frac{T}{100}$	Distances from vertical.	$\frac{T}{100}$	Distances from vertical.
0	0	20	148·5	40	246·4
2	15·7	22	161·5	42	251·2
4	31·3	24	174·0	44	255·1
6	46·8	26	185·9	46	257·9
8	62·2	28	197·0	48	259·5
10	77·6	30	207·4	50	259·9
12	92·3	32	216·2		
14	107·0	34	224·8		
16	121·5	36	232·7		
18	135·2	38	239·8		

The following Paper was read by the Author:—

The EARLY RACES *of* WESTERN ASIA.

By MAJOR C. R. CONDER, R.E.

[WITH PLATE I.]

THE subject of the present paper is one of growing importance, although in consequence of its difficulty it has not till lately attracted general attention. Wherever in Western Asia the student of Aryan and of Semitic history has carried back his inquiry to the earliest period, he has found himself confronted by populations speaking languages neither Aryan nor Semitic. In three cases these languages are known to belong to the family of the agglutinative tongues of Central Asia, to which the term Turanian is most commonly applied, including the Turkic dialects, the Mongolian language, the various Finnic tongues, and, as recent researches show, the language of the ruling Tatar race in China.

The question which is now raised concerns the affiliation of other dialects in Asia Minor, Syria and Greece to the same stock; and I may, perhaps, be permitted to say that this is a subject which I have studied in considerable detail for the last seven years; only very gradually arriving at conclusions based on much preliminary labour. It is a question of very general interest, for on the one hand it throws much light on early Greek and Roman history, and on the other it enables us better to understand the earlier part of the Old Testament, and the attitude of the Hebrews towards the Canaanite population of Palestine. But in order to work from the old to the new, and from the generally accepted to that which is still matter of discussion among scholars, a few words are necessary concerning the three languages above noticed as being Turanian. These are the Akkadian, the Medic, and the Etruscan; and for the present purpose it is not necessary to discuss the cognate dialects called Susian, Sumerian, and Cassite, concerning which we have only the most fragmentary information.

The Akkadian is the most ancient agglutinative language of which we know anything, and since its discovery forty years ago, by Sir Henry Rawlinson, it has been studied by many well-known scholars. During the year 1888 an excellent grammar has been published by Mr. G. Bertin. The vocabulary, though in part doubtful, has to a certain extent been fixed by bilingual texts and lists; the comparative study of the grammar, by Oppert, Lenormant, and others, leads to the usual classing of this primitive tongue as Turanian, the only question in dispute being whether the Finnic, Ugrian, or Turkic languages present the closest comparison. The comparison of the numerals seems

to me to confirm the recent conclusion of Dr. Hommel, and it appears that while comparable with Finnic and Ugric speech, Akkadian is even closer on the whole to the Turkic. Take, for instance, the Akkadian *Dimmir* or *Dingir* "god," or *Tin* "life" —the words are evidently nearer to the Turkic *Tangri* and *Tin* than they are to the Finnic *Yumala* and *Leine;* and so in many other cases. As regards grammar, the Manchu Tatar is in some respects nearer than any Finnic grammar to the earliest specimens of Akkadian, and on the whole the Turkic grammar, perhaps, presents most affinity, though like all other languages the Turkic has developed and advanced.

Akkadian is thought to have become extinct by about 1500 B.C., though the evidence seems to me only to show that it was little understood at that time by Assyrian writers, who regarded the language, however, with reverence and interest. It is through their translation of magical documents and hymns, that the Akkadian first became known to modern scholars; but even now it cannot be said that we have more than a very imperfect knowledge of the language, and it is impossible for even a specialist to dogmatise on the subject. According to Prof. Sayce's vocabulary, there are less than 100 certainly known words out of some 1,500 sounds.

The Turanian language of Media, known through the trilingual inscriptions of Darius at Behistun, first read by Norris, and deeply studied by Dr. Oppert, is stated by the latter great authority to approach most closely to the Turkic group. We as yet only possess about 200 words of this tongue; but as these are written syllabically, there is less doubt about their pronunciation than is sometimes the case in Akkadian. The Medic language is not the same as the Akkadian, though in syntax and in vocabulary it presents a very marked connection. Considering the difference of some 2,000 years in date, and 400 miles in distance, there can be no real doubt that the two languages are of the same stock, and probably belonged to the same original race. I am aware that I may be reminded that race and language are not synonymous, but such a distinction, when exaggerated, appears as likely to mislead as does the contrary assumption.

The third language above mentioned is the Etruscan, which, since Dr. Taylor in 1874 laid the basis of a scientific study, has generally been regarded as Turanian. In vocabulary it compares with the Finnic, Ugrian, and Turkic languages; and I find that out of some 250 known words, a large proportion are comparable with the Akkadian.

The question which it is now proposed to raise, is whether or no the early languages of Syria, and of Asia Minor, which are

traceable in the intervening regions between Mesopotamia and Italy, are not properly to be examined on the supposition that they belong to the same group of early Turanian tongues, to which the three already noted are to be ascribed; and whether our information concerning racial types, manners, and religion, does not serve to support the same conclusion. It is a very large subject, and the material available cannot be condensed into one short paper, or even into a pamphlet. I will, however, endeavour to put a few leading facts before you for consideration, treating first of Syria, and afterwards of Asia Minor.

For the last twenty years or more it has been known that, as early as 1600 B.C., at least, there were two races in Syria and Palestine known to the Egyptians. One of these was a Semitic race, speaking a language akin to Hebrew and Phœnician, and represented with Semitic features on the monuments. From their town-names, including many of the cities enumerated in the Book of Joshua, we learn that the Semitic nomenclature of Palestine is older than the Hebrew invasion under Joshua—a discovery which fully agrees with the statements of the Book of Genesis. It is not, however, with this Semitic population—the existence of which is proven beyond dispute—that we are now concerned, but with that other population, the contemporary existence of which, especially in the north between Damascus and Aleppo, is equally undoubted. The names of the towns conquered by Thothmes III, about 1600 B.C., in this region, are (as Chabas pointed out) not Semitic and not Aryan. When I found reason to suppose that they were probably Turkic, I made a comparison of the sounds with the Akkadian and with the Turkic languages, and the results appear to me to show beyond reasonable doubt, that these town-names are to be so interpreted. Several very distinctive Turko-Tatar words form often repeated elements of these names, among which I may mention as perhaps most clear: *Tami* for a "building," *Su* for "water," and *Tep* for a "hill." In this respect, therefore, the Syria of 3,500 years ago differs little from the Syria of to-day, when the same mixed nomenclature, Arab and Turkoman, is recognisable in the geographical names.

It is not on this list alone, however, that we need rely; for the personal names of seventeen chiefs of Northern Syria, mentioned in papyri of the time of Rameses II, tell the same tale. The chief tribe of non-Semitic race in Northern Syria was that of the *Kheta* or *Khati*, which, by common consent, is identified with the Biblical Hittites. Their power extended from Aleppo to Galilee, and in earlier times they appear to have extended their migrations to the very south of Palestine. We possess the names of seventeen of these Hittite chiefs—either personal or

else titles such as rulers received in Persia, in China and in other countries, distinctive of rank.

It was through observation of these personal names that I first became convinced of the Turanian origin of the race, and of its affinity to the Akkadian. The words *Tur, Sar, Nazi, Lul, Essebu, Lar,* and *Tarkon,* or *Tarka,* which occur as parts of the names of Hittite chiefs, are not at all unique words. *Tur, Sar,* and *Essebu* are words used in Akkadian for "chief" or "prince"; *Lul* is a word widely spread and used by the Hunns to mean "chief"; *Lar* is a familiar Etruscan word for chief; *Tarkon* is the Etruscan Tarquin, and survives in various Turkic dialects, and in the old Mongol (Buriat) *dargo,* as meaning the "chief of a tribe." These words and many others are clear evidence of the character of the Hittite population. *Nazi* is a Susian and Akkadian word which is spelt syllabically, and signifies a prince.

My comparisons have been carried from China to Etruria, and from Finland to Chaldea; from the earliest days, 3,000 B.C., down to the present day; and the net result is, that the Turko-Tatar languages serve best to explain both the geographical and the personal names of the Hittites.

In making these researches I have to thank Dr. Isaac Taylor for indicating the best sources of information, such as the Buriat vocabulary of Castren for Mongolian, and Böhtlingk's work on Yakut for the Turkic, in addition to the works of Donner and Vambery, and his own Etruscan researches.

In addition to these linguistic indications, which, as we shall see, are fortified by many other considerations concerning race, custom, and religion, we have monuments in Syria itself which present a system of hieroglyphics distinct from, though akin to, the other known systems of antiquity. That these inscriptions are written in an agglutinative language I propose to assume, because it is not now disputed by any scholar who has given careful attention to the subject.[1] That this language belongs to the same group with the Medic and Akkadian seems to me, in the first place, indicated by what has just been said as to the nomenclature of the Kheta, who inhabited the country where these texts are found; and secondly, by the recovery of the sounds belonging to many of the emblems.

The recovery of the sounds was due to an observation by

[1] Professor Sayce admits the Hittite language to have been agglutinative. For this reason it seems to me unsafe to compare it with the Vannic language which was inflexional, and as Professor Sayce now calls the Hittites "Mongols," there is no evident objection to the supposition that this language was Mongolian also.

Professor Sayce. He pointed out in 1876 that the old syllabary used by the Greeks of Asia Minor and of Cyprus, stood to the so-called Hittite hieroglyphics in the same relation as that of the hieratic to the hieroglyphic in Egypt. Here then, in the early Greek inscriptions, we possess sounds which in Greek are sounds only, but which in the original language of the Syrian hieroglyphics may, I think, have been monosyllabic words, having a meaning which was quite lost when the signs were applied, simply as emblems of syllables, to another language—a process which we know to have occurred in other cases.

To Professor Sayce we also owe the recovery of a short bilingual well known as the "Boss of Tarkondemos"; and in 1887 I found that the so-called Hittite emblems on this boss could by aid of the syllabic sounds, be read as Akkadian. I thus obtained the words *Ma*, "country," *Ku*, "king," and *Me*, "many," applying, the first to an emblem for country, the second to a royal tiara, the third to a series of strokes, such as stand for plurals in other systems. The picture value of the two first emblems was pointed out by Professor Sayce.

That *Ma* is Akkadian for country, *Ku* for king, and *Me* for the plural, I am assured to be correct by four of the best special scholars in Akkadian; but on their opinion alone I do not rest, because the same may be proved by consulting the living Ugric and Turkic languages. In Manchu Tatar we still have *Chu*, for a lord, as well as in other languages of the Mongolian group. The bilingual appears to me—as far as it goes—strongly to support the contention as to the general type of the language.

From this discovery I proceeded to investigate all those commonly recurring emblems of which the sound is recoverable, and of which the meaning and usual position in the texts are indicated by a careful comparison. I have thus, I believe, been able to fix the pronouns and case suffixes, and to determine some of the commoner verbs, and in every case I find the Akkadian and Medic to furnish the most reliable key, although the living languages may be called in to control the results of Cuneiform study. The case is thus rendered so strong that it cannot, I think, be undermined even by such errors of detail as I may have made; and my conclusions have been confirmed by the study of Mr. Bertin's valuable grammars published since my discovery; while the vocables have been overhauled for me through his kindness, and that of Mr. Pinches of the British Museum, one of our safest Akkadian specialists.

Turning from the question of language to that of racial types, it is, perhaps, sufficient to say that the authentic portraits of the Kheta on Egyptian monuments show a Mongolian type very similar to that of the Turkic and Mongol tribes of Central Asia

in our own times; and that the hair is in many cases dressed in a pigtail like that of the Tatars, which was imposed on the Chinese at the time of the Tatar conquest. The general absence of beard is also an indication of importance, plainly indicating a Turanian type. The high tiara and the shoe with curled toe (like the Etruscan *Tutulus* and *Calceus Repandus*) are both details of costume surviving to a late historic period in Italy among the early tribes, and in Western Asia among Turanians. Another detail of interest is the sort of axe or hammer held by some of the Cappadocian deities, and also by Sethluns in Etruria, and frequently by Charun, the Etruscan and Sardinian god of Hades. On coins of the Carian kings and towns in the 4th century B.C., the same instrument is held by a male figure. It also occurs on coins of Tarsus and Mylassa, and is sculptured at the latter Carian town on a door lintel. In Turkestan the *Ai Balta*, or "hammer of honour," was a mark of dignity down to the present century.

We know something of the religion of the Kheta from their invocation of the gods in their treaty with Rameses II. They adored the sun and moon, the mountains, rivers, clouds, and the sea. This animistic belief is common to all the tribes of Central Asia. Their gods are heaven and earth, the sacred mountain, the sacred river, the wind, the fire, and, among shore-side tribes, the sea also. The Akkadians had similar gods, including the "spirit of heaven" and the "spirit of earth." The Turanians do not appear to have adored the planets, which were so important in the pantheon of the Semitic peoples.

The civilisation of the Kheta was far advanced. They had walled towns, chased metal work, chariots and horses, skilled artificers. They could carve in stone, and could write in hieroglyphic character. All this wonderful cultivation they possessed while Israel as yet was hardly a nation, and the Bible account of the Canaan overrun by Joshua is fully confirmed by monumental evidence.

One other indication of custom may finally be noted as tending in the same direction. The Kheta married outside their own tribe—at least in some cases. Thus in the Bible Esau and Solomon had Hittite wives, and in Egyptian history a Hittite Princess wedded Rameses II. This custom is not distinctively Aryan. The Aryans married within the limits of the tribe (or as archæologists say they were endogamous not exogamous) preferring their relatives to strangers; and down to the present time this custom holds among the Iranians of the Caucasus. Turanian social ideas have always apparently differed very much from those of Aryans or Semites; since exogamy, polyandry and the tracing of descent from the mother are widely

spread customs among them even as far east as China. Many are the Turanian tribes ruled by women, or among whom women have great authority. The Salique law was not a Turanian idea.

If then from the preceding considerations it be concluded that the non-Semitic race in Syria was Turanian, and akin to the Turkic and Mongol stocks, and thus to the Medes and Akkadians further east, it becomes legitimate to compare the name of the Kheta with that of the great nation of the Khitai in Central Asia. The historic home of that people appears to have been in the high and healthy region of Kashgar, one of the most fertile portions of Turkestan, well watered, well pastured, the fit cradle of an energetic people. Where the Khitai first came from is matter of doubt. The tribe in question is distinguished as "black" or "western" Khitai, because another tribe of Khitai or Kitans lived in northern Mongolia and near Lake Baikal, where perhaps they left their mark in the town Chita marked on modern maps. Chinese authors regard this as the original home, but these are late authorities compared with Ptolemy the celebrated geographer, who speaks of these Khitai as even then dwelling in the Kashgar region above noticed.

The Western or Kara Khitai were the predecessors of the Mongols, and in the 11th century, A.D., they spread over the whole of Turkestan and across the Oxus. It appears that the celebrated Prester John was a prince of this people, and they only disappear from history when their power was broken by Chinghiz Khan and his Mongols. It is from these Khitai that the well-known mediæval name of Cathay is derived, for they conquered northern China and ruled the Mongols and the Manchus. They were bowmen and charioteers, they owned fields and built houses and planted mulberries. They had a mythology as fanciful and poetic as that of the Aryans, they wore armour and were acquainted with gold. They reverenced a sacred throne and carried with them a tent-temple, or tabernacle, in their wars. A few survivors bearing the name still exist, it is said, south of the Chu river. The language of the Khitai as investigated by Mr. Howorth is akin to Mongolian and to the Turkic dialects; and I may note that words are found in this language which also occur in Akkadian, and which in some cases occur also in the Kheta geographical names already mentioned.

In many other respects these Khitai resembled the Kheta of Syria. They had horses and chariots. They were skilful draughtsmen, and brought with them to China a written character of their own. They adored the spirit of heaven and the spirit of earth, the sacred mountain and other atmospheric

divinities. It may be said that it is a far cry from Syria to Kashgar; but distance is nothing to the Mongol. Age after age the Turanians of Central Asia have poured forth as Scythians, Hunns, Uigurs, Khitai or Mongols, penetrating to the shores of the Mediterranean and reaching Europe through Russia and Hungary. It is not possible to say, in the early times of which we are speaking, whether the migration had its centre in Turkestan or near the Caspian; but there appears to me to be no scientific objection to an identification of the Kheta, and the Khitai, since both are independently known to be a Tatar people.

Leaving for the present the history of the Kheta of Syria we may now turn our attention to Asia Minor. Here we find no traces of the name Hittite at all; nor does any ancient writer speak of a Hittite Empire or of a Hittite population in this region. On the other hand we have direct—though fragmentary—information from the monuments, which proves to us that a civilisation similar to, or identical with, that of the Kheta, existed in Cappadocia, in Caria and in Lydia, at a period quite as early as that already considered. Few as are the indications, they all point in one direction, and serve to give the connecting link between the Medes and Akkadians on the east, the Kheta on the south, and the Etruscans on the west. Professor Sayce has pointed out that the personal names of the Kings of the Gamgams, and of other tribes further west in Asia Minor, are to be compared with the Kheta personal names.[1] These facts, therefore, all agree with what has been already said of the Kheta language.

It is, perhaps, to this non-Aryan population in Asia Minor that Herodotus applies the name barbarian; and with them he groups the Pelasgi in Greece. The general consensus of ancient authority also derives the Etruscans from Asia Minor as relations of the Lydians. We have seen that the Etruscan language is Turanian, and this race was known to the Greeks as Tyrrhenians. There is no reason therefore to doubt that in Lydia a people of Ugric affinities must have very early existed.

A few words of the Lydian and Carian languages have also been preserved for us by classic writers; and although such

[1] Professor Sayce's lists include Vannic and Persian names as well as those resembling the Hittite, and these must be carefully sifted since the populations were certainly very mixed. Such names as Argestis (at Van), Kundaspi (in Komagene) and Kustaspi (or Hystaspes) seem to be Aryan, and the names of Vannic Kings generally might be so explained. The distinctive Hittite names for kings do not occur in Vannic, but among the Gamgams, the Cilicians, and some kings of Milid.

information is not of the most authentic, since it is very late and since copyists' errors may have crept into the unfamiliar sounds, yet in several cases these words seem clearly to be of Turkic character. Thus in Carian we have *Kôs* for sheep, which recalls the Turkish *Kozi*, "a lamb," which occurs also in Buriat for ram; and *Taba* for a rock recalling the widely used Turkic *Tapa*, *Taba* or *Tepe* for a hill top, and the Zirianian *Tup* meaning "a ridge." In the later Lydian many words seem to be Aryan, but others are Turanian. Thus *Lailas* for a "tyrant" is I think to be compared with the Hittite *Lel*, the Akkadian *Lil* or *Lala*, the Hunnic *Luli* for "Chief," and so in other cases which there is no reason here to detail.

Another indication which connects the Kheta very strongly with Lydia and Caria, is the existence in those regions of the syllabary which has been found to be derived from the old Kheta hieroglyphics. Nor is it only the syllabary which survives, for hieroglyphic texts accompanying rock-hewn figures have been found on the southern and western shores of Asia Minor, which without doubt belong to the same system with that of the Kheta. The great rock sculptures of Pteria in Cappadocia, are of the same character, and are accompanied by the same kind of hieroglyphics. Thus then there is no doubt that a race and a civilisation similar to that of northern Syria existed in early times from Armenia to the Bosphorus.

Sir Charles Wilson has added several new monuments to our list, and more remain to be found. Nor is it at all improbable that, on the frontiers of Assyria, bilinguals may yet be recovered which will serve clearly to elucidate the language of the so-called Hittite monuments.

There is also to be found in Asia Minor a class of antiquities which serves to connect this early civilisation with that of Babylonia; namely, the seal cylinders which have been recovered in Lydia and Cappadocia, and which in general character recall those discovered in Mesopotamia. These little cylinders in hard stone, engraved with mythological subjects, and in some cases having hieroglyphic emblems like those of the Hittite texts, are believed to have been worn as amulets. They differ only from the early Akkadian cylinders in the character employed in writing, since they have no cuneiform symbols. I have collected representations of twelve of these cylinders, which when rolled on plaster of Paris produce beautifully sharp impressions in relief. Mr. Greville Chester has lately discovered in Asia Minor several more of the same type, as well as two valuable seals, one of which has a much worn Hittite inscription. From these cylinders we obtain a very fair idea of the religion of the race; for it will not, I suppose, be doubted that

winged warriors, bull-headed men, hawk-headed cherubs, and other such figures are intended to represent gods and genii. In some cases these figures stand erect on various animals, such as the deer, the horse, the lion, the rabbit. In other cases, the winged sun occurs as in Assyria. The goddesses of these cylinders are two, one having the lion, the other the dove for her emblem, clearly representing Nana, the mother goddess, and Istar, the Turanian Venus, to whom these emblems are attributed in many parts of Asia. The representation of gods erect on animals is not peculiar to these cylinders or to the Cappadocian bas-reliefs, or to the coins of Asia Minor. At Bavian, two Assyrian gods are so represented, and at Malthai, 75 miles north of Mosul, the seven great gods appear standing on the lion, the dog, the horse, the winged bull, the deer, &c. The same symbolism is not unknown in Egypt, and the Indian gods stand each on its peculiar animal or *vehan*. In Phœnicia a similar art is found only distinguishable by the alphabetic lettering of the seals and cylinders. It should be noted that the deer, the ass, the horse, and the bull, are sacred animals of the Turanians sacrificed to the gods. Thus the Khitai above noticed, sacrificed deer, oxen, and horses, while the "horse chief" and "bull chief" are well-known Chinese deities. I believe it to be possible to work out the Asia Minor pantheon, and to identify almost every deity with one of those adored by the Akkadians, which as we know from Akkadian litanies included sun, moon, wind, water, fire, and the goddesses of light and of the earth.

The scattered notes found in ancient writers give us occasionally an additional indication pointing in the same direction. Thus we know that the Tibareni of Pontus practised the curious custom of the *couvade*, according to which it became the duty of the father of a new-born child to take to his bed and attend to the infant, while the mother went about her house work and attended to their wants. This is a very widely spread custom in many parts of the world, but, as far as I know, was never practised by either Aryans or Semitic peoples. Marco Polo mentions it in China, and Chinese writers speak of it as peculiar to some of the aborigines of the country. It also is known among the Basques in the south-west corner of France, and these people are of Turanian origin. In Asia the couvade appears to distinguish the Tatar or Mongol peoples, and its discovery among the Tibareni agrees, therefore, with all our other evidence.

The great Philistine race in southern Syria was in all probability of the same stock though mingled with a Semitic people. The head-dress of the Philistines, according to Egyptian pictures, is similar to that of the Teukrians, and their beardless

faces appear to be non-Semitic. There are many town and personal names in Philistia, mentioned in the Bible, which seem to be non-Semitic, and have never been translated in Hebrew. Hitzig believed the Philistines to be Pelasgi, and the Bible classes them with certain Egyptian tribes. It is not possible here to diverge to the question of the Turanians in Egypt, but their early existence there is becoming pretty generally recognised. The Philistines were an uncircumcised people, and circumcision is not a Turanian custom. Schrader expresses the opinion that the name of the Philistine god, Dagon, known in Babylonia as Dakan, is not Semitic, but is to be referred to an Akkadian etymological origin. In this connection, it is interesting to note that even in the eighth century, B.C., the Philistine city of Ashdod is mentioned as a city of the Hittites in an inscription of Sargon. This fact which agrees with the Bible account of Hittites in the south of Palestine, and with the survival of the Hittite name in the modern villages, Hatta and Kefr Hatta in Philistia, is a monumental rebuke to those prejudiced persons who have striven to show a discord which does not exist between the Biblical and the monumental accounts of the sons of Heth. One interesting particular I would note in speaking of this branch of the Syrian Turanians, namely, the objection which the Philistine priests had to treading on a threshold. The objection still holds among Syrian Moslems, whatever be its origin, but among the Mongols this became a very important superstition. The ambassadors sent to Mangu Khan were carefully instructed, as we learn from various writers of the 13th century, not to tread on the threshold; guards were set to prevent the occurrence, and one unfortunate European lost his audience and was stripped of his clothes because he stumbled on the threshold as he went in. Thus the old Philistine superstition of "hopping over the threshold" connects them with Turanian races of the East.

In suggesting the existence in Lydia and Caria of an early Turanian population akin to the Medes on the east, and to the Etruscans on the west, I do not, of course, ignore the fact that there were other elements of population in Asia Minor. We know of Phœnician and of Early Greek colonies. In Lycia we have a short text in Greek and Phœnician, and we have long inscriptions, in some cases bilingual in Greek and in a language akin to the early Persian of the monuments and to Zend.[1] It is a question to a great extent of date, since the rude

[1] The study of Phrygian (see Appendix) shows that early Aryan languages existed in Asia Minor, besides Greek and Persian. It appears to me that not only the Phrygian monumental texts at the tomb of Midas, but probably also the recently found texts of Lemnos, and the so-called "Carian" graffiti in Egypt,

sculptures and hieroglyphics which we are considering, are older than the 14th century, B.C., whereas the Lycian texts just mentioned, date about 500 B.C., and the population a thousand years earlier may have been of different character, considering the incursions of Cimmerians, Phrygians, Assyrians, Persians, and Greeks. But Herodotus tells us that before the rise of the Persians, the Medic power marched with Lydia, the Halys being the border, and I would suggest that just as in the inscriptions of Darius, a Turanian and an Aryan language stand side by side, so in Asia Minor an early Turanian race existed side by side with more than one Aryan stock, and sent forth to Italy the Turanian Etruscans whom all the ancients regarded as of Lydian origin.

There is a question which should be here mentioned, in order to make our inquiry more complete, although the result is mainly negative. Lenormant proposed to avail himself of the Caucasian languages in studying the old texts of Lake Van, which Prof. Sayce has deciphered, that is to say, of the small group of so-called Lesghic languages, belonging to the peoples on the slopes of the Caucasus—the best known literary example of which is the modern Georgian. But in order to judge how far this modern language may be of assistance, it is evidently first necessary to ask what Georgian is. The literature of this language is not traceable earlier than Byzantine times at most, so that more than 2,500 years elapse between the times of which we are treating, and the earliest known examples of the Georgian language. In personal appearance the Georgians (of whom I have seen many on pilgrimage to Jerusalem) are a Turanian people, with some mixture probably of other blood—Aryan, and perhaps even Semitic. The Georgian grammar compares with Turanian (as indicated by the absence of gender, the position of the plural, the use of suffixes, and the syntax), but like Turkish the language has advanced much further than those of Central Asia; and it has attained to a rudely inflexional condition. It is also comparable in many respects (especially in the case endings of the nouns) to the old Persian of the Behistun texts. It is found that even in the earliest known Georgian books, a large proportion of the words are of Aryan origin. They appear to have existed early in the language, and are akin to words of the Iranian languages, and in some cases occur in Armenian. At the same time the commonest words in the language, such

together with early texts in Italy, belong to such dialects of early Aryans. Independent study has also led me to believe that the language of the Vannic inscriptions (which Dr. Mordtmann compared with Armenian) is a very early Aryan language, akin to the Phrygian on one side, and to the monumental Persian on the other, and comparable with Zend, and with Armenian.

as "father," "son," "morning," "city," "man," "god," with common verbs such as "burn," "bend," "rub," "take," "think," "slay," "drink," "present," and "go," are plainly connected with the Mongolian and Tatar languages, and have often undergone only very slight changes.

Georgian then is a mixed language, a modern language, and one to use which without careful sifting would be as unscientific as it would be to rely on modern Turkish, with its enormous foreign vocabulary and its advanced grammar. When Georgian is sifted the result apparently brings us round to the same study previously followed at greater advantage, through the purer dialects of Central Asia, and the ancient languages of Media and Chaldea.

The Caucasus, indeed, is a rubbish heap of mixed languages and broken tribes. To it have fled those weak or defeated peoples whom more vigorous races drove from the plains; nearly 1,500 years ago there was a great independent Jewish kingdom in the Caucasus, mingled with a Turkic population and with Aryan tribes. Turkic, Iranian, and Semitic peoples still form its mixed population, and the Lesghic dialects have, no doubt, been materially influenced by this mixture of race. It is generally recognised that the early homes of powerful races are found in the rich plains, beside the great rivers whose courses their migrations so often follow. A rugged region like the Caucasus is the refuge of dying tribes, not the cradle whence they issue victorious.

The preceding notes have, perhaps, indicated that the question of the nationality of the early non-Aryans in Syria and Asia Minor has been examined on a broad basis. Of all the North Turanian languages—Chinese, Mongolian, or Finnic—the Turkic languages of the region between China and the Caspian appear to throw most light on the subject. The Lesghic dialects are too modern, and too much subject to a variety of foreign influences, to be of great value; and their study has not been found to lead to any appreciable result. Thus no scholar has succeeded through Georgian in interpreting any Hittite noun or verb, and the Georgian words for "king" and "country" do not agree with the probable sounds on the short bilingual. As, in short, Georgian has been tried and has failed, whereas Akkadian and the Turkic dialects may be tried with important results, I submit that this aspect of the question has not been neglected. Georgian, as we have seen, would be as dangerous a guide to the student of the older languages, as would be the Armenian or the Osmanli-Turkish.

Before quitting the question of the Hittite monuments, I would say one or two words as to their decipherment. In the

first place, whether Georgian or Akkadian be the true comparison (for we may, I think, lay aside all Aryan and Semitic inflexional languages as impossible of application) it is equally clear that the syntax of the texts will place the verb at the end of the phrase. Misled by the familiar Egyptian syntax, and by comparison of a Hittite noun sign with an Egyptian verb sign, almost every student of these texts has supposed them to begin with the verb. The consequence has naturally been that their attempts to identify the particles have been vitiated by this error in syntax, natural as such an error may have been.

As regards the subject of the texts it is a pure assumption that they are historic. Some, indeed, have long been recognised as probably votive. Historical texts in Asia belong to a late period, as compared with the ancient religious, magical, and votive inscriptions of the Akkadians, Etruscans and others. In Egypt, history bears a small proportion to ritual mythology and prayer; and so, generally speaking, in the ancient world, spells and invocations, records of gifts to temples, long hymns in praise of the gods, precede the era of annals and historic records.

To sum up our enquiry. We have seen that monumental traces exist in Mesopotamia, in Media, in Asia Minor, and in Syria, of a great Turanian stock more closely akin to the Turkic and the Ugrian than to any other. We have seen that wherever the old centre of civilisation may have been, whether on the south side of the Caspian as many now suppose, or in Central Asia as used to be believed, the fact remains that the Tatars from Turkestan are of the same stock with the Kheta, the Lydians, Carians, and Cappadocians, and with the Etruscans or Tyrrhenians of Italy. It is but an earlier edition which we are considering of that great advance which in the 13th century A.D. brought the Mongols to the Mediterranean and to Hungary.

Far away to the west, in the Pyrenees, the remnant of the old Iberian stock—of the same Asiatic origin—remains among the Basques. It is traced in the Tyrol and among the north Italians, as well as among Sabines and Tuscans. In Egypt the same people early found a place. Wherever they went they erected great cities of unsquared stone, and brought with them the arts of painting, of writing, of metal work in gold, silver, and bronze. It is on this basis that Chinese civilisation has arisen, and far from being barbarians, the Turanians were the first civilisers of Western Asia, and the first to spread the arts and sciences of the old world along the southern coast of Europe. Forgotten for a time, while Aryans and Semites absorbed our attention, they now begin to claim their rightful place in the history of human civilisation originating in Asia.

One Hundred Hittite Words,

Compared with Akkadian, Medic, Susian, and Etruscan, and with Turkic and Mongol words of archaic living languages.

A, "water," Akkadian, *a;* Susian, *a;* Yakut, *u;* Wogul, *ia*, "water."

A, participial suffix, Akkadian, *a;* Yakut, *a*, participial suffix, and *ä*, "to be."

AB, "house," "abode," Akkadian, *ab;* Osmanli, او, *ev;* Altaic *eb*, *ev;* Chagataish, *oba*, *ova*, "house."

AI, Akkadian, *E;* Medic, *E;* Susian, *Ua;* Chagataish, *oy*, "house."

AKA, "chief," Akkadian, *Aga;* Osmanli, آغا, آقا; Yakut, *ichchi;* Chagat, *ege;* Uigur, *ige*, "lord"; Yakut, *agha*, "father," *asa*, "grandfather."

AKER, Etruscan, *ager*, "field"; Chagataish, *kir;* Lapp, *aker*, "field," (also an Aryan word).

AMAR, Akkadian, *Amar*, "circle"; Uigur, *evirmek*, "to make round."

AN, "god," Akkadian, *an;* Medic, *an;* Etruscan, *an*, *un;* Susian *an;* Osmanli, انا "holy."

AR, IR, "man," Akkadian, *eri*, *ur;* Buriat, *ere;* Yakut, *är;* Osmanli, ار *er;* Medic, *Ruh.* Common to all Tartar dialects with the sense "strong," "male."

ARI, "river," Akkadian, *aria* (Lenormant); Osmanli, ايرمك Yakut, *ürüya*, "stream"; Hungarian, *ar*, "stream"; Basque, *ura*, "water"; Yakut, *örüs*, "river."

ARN, "ravine," Chagataish, *arna*, "cleft."

ATA, "chief," "father," Akkadian, *adda*, *ad*, "father"; Medic, *ati*, *atu;* Osmanli, اتا; Chagataish, *ata;* Uigur, *ata;* Yakut, *ese;* Buriat, *esega;* Kirghiz, *ada*, "father."

ATR, court, Etruscan, *Atrium;* Tschuwash, *odar*, "sheep fold."

AUN, Akkadian, *un unu*, "city"; Etruscan, *on*; Tcherkess, *unneh*, "house."

AUL, Khitan, *wolutu*, "camp"; Osmanli, آولو, "courtyard"; Tcheremiss, *ola*, "town"; Etruscan, *vol*, "town."

BEK BOG, Uigur, *bekük*, "fortress"; Malamir, *bukti*, "shrine"? Buriat, *boko;* Yakut, *bogho*, "strong."

BU, Akkadian, *pu*, "pool."

ENU, "lord," Akkadian, *enu unu;* Manchu, *wang*, "prince"; Chagataish, *inak*, "prince."

EN or NI, "saying," "prayer," Akkadian, *En*, "prayer"; Medic, *na*, "say"; Yakut, *uñ*, "ask"; Buriat, *anir*, "voice"; Uigur, *on*, "call"; Altaic, *ün*; Chagataish, *ön*, "sound"; Osmanli, *ön*, "voice."

Essebu, "chief," Akkadian, *Esebu*, "prince."

Ga, "oh," vocative prefix, Akkadian, *ga;* Yakut, *cha*, interjection.

Ga, adjective affix, Akkadian, *ga*, adjective affix; Medic, *iki;* Susian, *ak*.

Gu, "word" "say," Akkadian, *gu;* Buriat, *uge;* Yakut, *ös;* Chagataish, *chau;* Uigur, *chau*, "call," "speech," "word"; Buriat, *goi*, "say," "ask."

Iniel, p.n. c.f. Uigur, *yeñil*, "conquest."

Ka, "for," "to," Akkadian, *ku;* Medic, *ikki*, "to"; Susian, *iki ka*, "with"; Turkish dative, *ka*; Buriat ablative, *aha;* Yakut, *gha*, dative.

Kal Gal, "great," Akkadian, *gal;* Susian, *khal;* Buriat, *kolo* "wide"; Yakut, *khan*, "great," *khaliñ*, "thick"; Chagataish' *kalin*, "great"; Kirghiz, *kalen*, "thick;" Osmanli, قالين, "big," "thick."

Kan, Gan, "enclosure," Akkadian, *gan*, "enclosure"; Manchu, *yuan*, "garden"; Yakut, *khonu*, "field."

Kar, "fortress," Akkadian, *kar;* Mongol, *hur*, "enclosure"; Buriat, *ger*, "house"; Alt, *kori*, "to fortify," *korum*, "fortress."

Keb, Akkadian, *gubbu*, "heap"; Chagataish, *köb*, "heap"; Buriat, *gubi*, "mountain"; Wotiak, *cappa*, "a grave hill"; Hungarian, *kup*, "to heap up."

Kan, "this," Akkadian, *qan*, "this"; Etruscan, *ken*, "this"—a prefix; Buriat, *ken*, "who"; Yakut, *khan*, "who."

Khal, "city," Medic, Susian, Malamir, *khal;* Akkadian, *kal*, "fortress."

Khat (Kheta, adjective), Hittite, c.f. *Khitai* (tribe). In Mongol and Yakut the name is applied to the Chinese.

Keti, "with," Akkadian, *kit*, "with"; Medic, *kutta*, "also"; Yakut, *kitta*, "with."

Ku, "king," Akkadian, *uk* and *ku*; Susian *ku* "king"; Manchu, *chu*, "lord"; Cantonese, *chue;* c.f. Akkadian, *uk*, "great"; Buriat, *ike*, "great"; Yakut, *koyu*, "thick," *uigu*, "broad," *us*, "master," *usa*, "high," see Aka. Chagataish, *okti*, "honour;" Uigur, *ükis*, "high"; Akkadian, *ku*, "high."

Kur, mountain, Akkadian, *kur;* Medic, *kurkha;* Lapp, *kor;* Tcheremiss, *korok*.

Lab, Akkadian, *lab*, "brave"; Azerbaizan, *lab*, "brave, strong good"; Buriat, *lab*, "good"; Osmanli, الب, "brave."

Li Lu, adjective affix, Akkadian, *li* (Lenormant), adjectival affix; Hungarian *ul;* Osmanli, لي لو adjectival affix for adjectives of possession; Yakut, *li*, adverbial affix.

Lu, "yoke," Akkadian, *lu*, "yoke"; Chagataish, *olmek*, "to bind"; Uigur, *ilmek;* Yakut, *īl*, "to join," or "tie."

Lul, Lel, chief, Akkadian, *lala, lul, lil*, "ruler"; Hunnic, *luli*, "chief"; Altaic, *ulula*, "to become great."

Man, "chief," Akkadian, *man*, "king"; Yakut, *maña*, "great"; Kirghiz, *manap*, "leader," "elder."

Samoyed, Siberian, and Mongol, *tura*, "tent"; Esthonian, *tare*, "abode."

ZAK, Akkadian, *zig*, "building," "high place."

ZAKAR, apparently *zigar*, "monument" (probably Semitic).

ZI or ZÖ, Akkadian, *zi*, "spirit"; Chagataish, *is*, "blow,' "wind."

ZU or OS, pronoun? Akkadian, *zu*, "thou"; Mongol and Manchu, *si*, "thou." The sound of the Hittite sign is, however, doubtful; it may be *o* or *no*.

ZUNEKE? "thine" (see NEKE); Buriat, *sinike*, "thine."

ZI-AN, compare the Akkadian *zi-ana*, "spirit of heaven." *An-zi* also occurs on a Hittite text.

Asia Minor Words.

Mentioned by Greek Writers.

Carian—

KŌS, "sheep," Osmanli, قوزي, *kozi*, "lamb"; Buriat, *kozi*, "ram"; Kirghiz, *koi*, "sheep"; Hungarian *kos*, "ram."

TABA, "rock," see Hittite *tep*.

GELA, "king," see Hittite *kal*; Chagataish, *kalga*, "lord."

SOUA, "tomb," Etruscan, *suth*.

GLOUS, "robber," Buriat, *kulu*, "steal."

ALA, "horse," Hungarian, *lo*; Turkic, *at*, "horse."

Lydian—

LAILAS, "tyrant," see the Hittite *lul*.

MŌUS, "the earth;" Esthonian, *meisa*; Hungarian, *mezö*, "land," "earth."

TARGANON, "branch," Esthonian, *tarkan*, "to sprout forth."

SARDIN, "year;" Medic, *sarak*, "time"; Turkic and Mongol, *sal*, *sil*, "year."

TEGOUN, "robber"; Yakut, *tüokün*, "cheat," "thief."

Cilician—

ABAKLES, "high priest"; Buriat, *bo*, "priest," see Hittite *kal*.

TARKONDIMOTOS, a king's name, see Hittite *Tarka*.

The Asia Minor words are in some cases, however, of Aryan origin as is shown by the following:—

Phrygian—

BEKOS, "bread;" Persian *baj*, "food."

BAGAIOS, "God;" old Persian, *Baga*; Slav, *Boga*, "God."

KIMEROS, "chamber;" Armenian, *gama*, "vault"; Zend, *kamara*, "vault"; Greek, *kamara*; Latin and Italian, *camera*, "chamber."

Lydian—

ANKÓN, "corner;" Armenian, *angiun*, "corner."

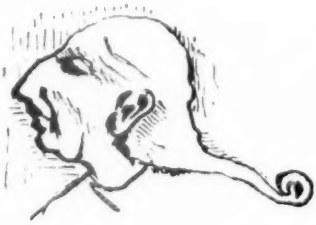
KAPITHE, "measure;" Armenian, *chaph*, "measure."

KIRGHIZ TATAR.

UZBEK TATAR.

AKKADIAN.

AKKADIAN



HITTITE CHIEF.

CAPPADOCIAN.

ETRUSCAN WOMAN.

ETRUSCAN MAN

Explanation of Plate I.

Fig. 1. *Kirghiz Tatar.* From Schuyler's Turkestan (Vol. i, p. 42), engraved from a photograph.
Fig. 2. *Uzbek Tatar.* From same source (Vol. ii, p. 28).
Fig. 3. *Akkadian.* From photograph of a bas-relief at Tell Lo. (De Sarzec. Plate III).
Fig. 4. *Akkadian.* From photograph of a statue-head at Tell Lo. (De Sarzec. Plate XII).
Fig. 5. *Hittite Chief* (with pig-tail). From Karnak. From photograph from Mr. F. Petrie's cast (No. 156).
Fig. 6. *Cappadocian* (with pig-tail). From photograph, of bas-relief at Keller, kindly lent by Mrs. Barnes.
Fig. 7. *Etruscan Woman.* From bronze in British Museum.
Fig. 8. *Etruscan Man.* From terra-cotta figure on sarcophagus in British Museum.

DISCUSSION.

Dr. BEDDOE had noted Major Conder's statement that the Georgians showed signs of Turanian or Mongoloid affinity in their physical type. He thought people were too apt to take their idea of a Turanian type too exclusively from the Kalmuks, and perhaps from extreme examples among them. A physical type more Turanian than Aryan was quite consistent, as in the Georgians, with a high average of beauty. A large aquiline nose was not uncommon among the Turkomans and Yuruks, though their blood was but little crossed, so far as we could judge, with that of any Aryan stock. The beard might be very late in development, yet ultimately attain considerable proportions. The wearing of the "pigtail" by the Hittites he thought very important; it was only straight coarse hair that lent itself fully to that mode of coiffure. The features of the Tokkari, as well as of the Hittites, he thought Turanian. If Major Conder could bring linguistic or other evidence to bear on the Turanian origin of the Pelasgi, it would help them to explain a prevailing physical type among the modern Greeks, which was not Aryan, and was not that handed down to us in alleged portrait-statues and which could hardly have been brought in by the Slavs, who were pretty pure Aryans.

Mr. G. BERTIN said that Major Conder in his interesting paper seemed to have shown that a Turanian population (to use the term generally accepted, though perhaps not satisfactory)—a population akin to the Akkadians of Babylonia—inhabited Syria and Asia Minor and used a special system of writing, which has been called "Hittite." This conclusion is not surprising now that the cuneiform studies have demonstrated the presence of Akkadian kingdoms at a most ancient date (before B.C. 6,000). From cir-

cumstantial evidence it appears also that the use of the "Hittite" writing is much earlier than was thought before, and must be anterior to the Babylonian and Egyptian invasions of Syria. The "Hittite" script seems to have been derived from early Egyptian picture writing, perhaps collaterally with the Babylonian before it became cuneiform; it lasted to a rather late date, but was ultimately superseded by the Phœnician alphabet. As to Asia Minor the Turanian populations extended there probably at the time of the Akkadian invasion (B.C. 6,500 *circa*), at a late date they were superseded by Aryan tribes, coming from Europe, for, from the mountains of Armenia to the Persian Gulf, no Aryan tribe appeared before the fall of Nineveh.

Mr. LEWIS enquired whether Major Conder connected the dolmens and circles which were mentioned in his works as existing in Western Asia with the "Turanian" or any other race or races, and, if so, which?

Mr. BOUVERIE-PUSEY asked Major Conder if he was not right in supposing that tribes of Asia Minor had contributed auxiliaries to the king of the Hittites in his war against Rameses the Great; he also asked what Major Conder thought of Professor Sayce's view that the notion of the Amazons was derived from Hittite priestesses armed with the battle-axe, and whether there is any evidence of the existence of such priestesses.

MAJOR CONDER in reply said that he was glad that the views expressed in his paper met with so favourable a reception from the President and members of the Institute. As regards the points raised he was aware that Mr. Bertin had brought forward important evidence of the early civilization of the Semitic race in Chaldea as shown by star names, &c., but he doubted if we knew enough to determine the origin of the civilization of Mesopotamia. It seemed, however, certain that the Turanians were the first to spread this civilization in Asia Minor and Etruria as well as in Syria. He agreed that the script in question was older than the Phœnician alphabet or than the Babylonian invasion of Syria about 1450 B.C., and believed that the so-called "Hittite" monuments must be at least as old as 2000 B.C., perhaps much older. Lenormant had long ago pointed out the existence of a Turanian population in Asia Minor, and Major Conder believed that about 500 B.C. there were in addition to Semitic colonies four races in Asia Minor, 1st Greek, 2nd Phrygian with a language of Aryan type the basis of modern Armenian, 3rd Lycian, with a language somewhat like Zend, 4th the Lydian-Carian race, Turanian and perhaps nearest the Turkic. As regarded rude stone monuments he was inclined to believe that in Western Asia they were the work of Turanians as was what Pausanias called "Cyclopean" masonry accompanied by false arches which existed wherever the Turanians were known, in Media, Syria, Asia Minor and Italy. The distribution of rude stone monuments in Syria (of which he

had inspected some 700 examples) seemed to show that they were destroyed within the region of the influence of the Kings of Judah as were also the bas-reliefs and rude statues of the Turanian Canaanites. As to the use of bronze, gold and silver, it was certain that these metals, with lead and iron, were all known to the Akkadians, as shown by cuneiform texts. With respect to the alliance of the Kheta with tribes of Asia Minor there was monumental evidence that such alliance did occur in face of Egyptian invasions, but it was not known whether such alliance was more than temporary, and Major Conder considered that this gave no real ground for extending the name Kheta to any tribes beyond the limits of Northern Syria where alone do they seem to have been known to either the Egyptians or the Assyrians. The proposal to identify the Amazons with priestesses of the goddess Ma mentioned by Prof. Sayce appeared to Major Conder to have no foundation. He was very glad to find that the President gave his consent to the view that the race represented on the monuments which accompany the so-called "Hittite" hieroglyphs was Turanian and observed that the portraits of the Kirghiz Tatars much resembled the Kheta and that the Tatar physiognomy of the Etruscans had been pointed out by Dr. Isaac Taylor and Sir C. T. Newton. The peculiar hat worn by the Philistines and the Takrui on the Karnak monuments also appeared to be represented on a monument discovered by Sir C. W. Wilson at Damascus which was of the most archaic character. Major Conder believed the President's view to be possibly correct, making the Pelasgi to be Turanians, and cited the word *Tepæ* for "hills," said by Varro to be Pelasgic, and resembling the Turkish *Tepe*, Mongol *dobo*, Finnic *typa* "hill." Major Conder was also glad to have the President's support in the question of the racial character of the Georgians and other tribes of the Caucasus. As regarded the Cappadocians, it appeared certain that the same race which has left these peculiar hieroglyphs at Carchemish, Aleppo and Hamath, also existed in Cappadocia, where the same script is found on the monuments. In conclusion Major Conder noticed that Prof. Sayce lately wrote from Egypt concerning a letter in what the professor believed to be a "Hittite dialect," with Akkadian verbal forms, and remarked that in his latest work Prof. Sayce calls the Hittites "Mongols." Major Conder hoped that the discovery by German explorers of bilinguals, said to throw light on the Hittite language, might serve to further elucidate the subject when published.

MARCH 12th, 1889.

PROF. FLOWER, C.B., F.R.S., *Vice-President, in the Chair.*

The Minutes of the last meeting were read and signed.

The election of the MARQUIS DE NADAILLAC, as a Corresponding Member, was announced.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

From the AUTHOR.—Natural Inheritance. By Francis Galton, F.R.S.
—— Note on the Lapps of Finmark. By H.H. Prince Roland Bonaparte.
—— La Nouvelle-Guinée. 3e Notice, Le fleuve Augusta; 4e Notice, Le golfe Huon. By H.H. Prince Roland Bonaparte.
—— Handskelett und Hyperdaktylie. Von J. Kollmann.
—— Geografia Etnologica e Storica della Tripolitania, Cirenaica e Fezzan. By Ferdinando Borsari.
From PROF. DR. H. SCHAAFFHAUSEN.—Die XIX, allgemeine Versammlung der deutschen Gesellschaft für Anthropologie, Ethnologie und Urgeschichte zu Bonn, den 6. bis 10. August, 1888.
From the ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.—The Scottish Geographical Magazine. Vol. v. No. 3.
From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. xi. No. 3.
—— Proceedings of the Society of Biblical Archæology. Vol. xi. Part 4.
—— Journal of the Society of Arts. Nos. 1893, 1894.
—— Journal of the China Branch of the Royal Asiatic Society. Vol. xxiii. No. 1.
From the EDITOR.—Nature. Nos. 1009, 1010.
—— Science. Nos. 315, 316.
—— Revue Scientifique. Tome xliii. Nos. 9, 10.
—— Bullettino di Paletnologia Italiana. Tomo iv. N. 11 e 12.

EXHIBITION *of an* ARTIFICIALLY-DEFORMED SKULL *from* MALLICOLLO.

By PROFESSOR W. H. FLOWER, C.B., F.R.S., V. P. Anth. Inst.

PROF. FLOWER exhibited the head of a native of the Island of Mallicollo in the New Hebrides, artificially deformed, and with the face restored with a composition made of vegetable fibres and gum, exactly as in the specimens previously described by

him in the Journal of the Institute, vol. xi (November, 1881). It is to be noted, however, that those specimens which were monumentally prepared were apparently all males, while in this one feminine characteristics predominated. It was presented to the British Natural History Museum by Mr. Henry Anson, who has sent the following note in reference to the practice of skull deformation in Mallicollo:—"The inhabitants of this island afford the only example of this process of skull compression out of thousands of people from the different islands that came under my notice as Protector of Immigrants during a period of six years in Fiji. It is curious also that the practice obtains only amongst a certain section of the inhabitants of this large island, its limits being determined as far as we know by geographical position. The people having compressed skulls do not appear to suffer in intellect from the practice, but there is no doubt that their health is seriously prejudiced thereby when suffering from the fevers which are common to such people, the mortality being greater amongst them than amongst their round-headed fellow countrymen, those with compressed skulls being subject to severe delirium on slight provocation. I was never fortunate enough to meet with an islander who could inform me of the supposed origin of the practice."

DISCUSSION.

DR. CODRINGTON said that there were two places in Melanesia in which the skulls of infants are artificially deformed; one in the Island of Three Hills, one of the New Hebrides group, and near to Malikolo, the other in the interior of Fiji. He had seen himself natives of the first-named place with deformed skulls, and had been told that the deformation was effected in infancy; but he did not know the method by which it was effected. His authority with regard to Fiji was that of the Rev. Lorimer Fison.

DR. HICKSON observed that in some districts of Minahassa in North Celebes, the custom still persists of flattening the heads of the children by means of a board called the "taleran" bound on to the forehead. Every morning when the child is bathed the board is loosened and immediately afterwards fixed up again. This process of head manipulation lasts for fifty or sixty days after birth. The only other district in which the practice occurs in the Malay Archipelago is Birool, another province of North Celebes. In early times it is stated the flattening of the head was a prerogative of nobility.

Mr. C. H. Read remarked that he had seen, in the Borneo section of the Colonial Exhibition, an instrument stated to be used for compressing the skull. It consisted of an oblong piece of hard wood, with projections at the two ends. From end to end was a broad strap, which seemed to be intended to pass around the head,

while a narrower band was attached to it at right angles, as if to pass over the top of the skull. Thus the pressure would be either upon the forehead, or at the opposite side of the skull. Mr. Read did not remember to have seen any skulls from Borneo so deformed.

The following note was then read by the Secretary:—

NOTE *on the use of* "ELK" TEETH *for* MONEY *in* NORTH AMERICA.

By HENRY BALFOUR, ESQ., M.A., F.Z.S.

AMONG the various natural objects described as passing for currency in different savage races, I have not seen it recorded that "Elk" teeth are so used by natives of North America. This particular form of money consists of the canine or "eye" teeth of the Wapiti (*Cervus Canadensis*, Schrab), which goes by the name of "Elk" in those regions. The canines are alone used, and of these there are but two in each animal. They pass as currency amongst the Shoshone and Bannock tribes of Idaho and Montana, and probably, no doubt, other tribes also; passing as a substitute for coin amongst the natives themselves, and not between Natives and Whites. They represent at present a value of 25 cents of American money; but, with the increasing scarcity of Wapiti, it is reasonable to suppose that the value will rise, if these teeth retain their function as currency. There being considerable difficulty in obtaining a quantity of these products of hunting, and from the fact of each animal only supplying two canines, it is easy to see that a definite value can be set upon such trophies, and how they may have passed into a recognised form of currency. As is so frequently the case with savage money, these "Elk" teeth are used as ornaments; they are frequently pierced with a small hole, and sewn on to clothes, pouches, &c., to form decorative trimmings. I am indebted to my friend, Mr. J. W. Young, for specimens (some of which are exhibited), as well as for information concerning them.

NOTES *on the* MODERN SURVIVAL OF ANCIENT AMULETS AGAINST *the* EVIL EYE.

By E. B. TYLOR, Esq., D.C.L., F.R.S., V. P. Anth. Inst.

Dr. TYLOR exhibited a series of the brass ornaments hung to the harness of cart and waggon horses in England, and called by saddlers "face-brasses." In the course of collecting amulets against the evil eye, he had received by the kindness of Mr. Neville Rolfe, of Naples, a set of brass harness-ornaments, including crescent moons, there used avowedly for this purpose. The correspondence of these with the brass crescents (with and

without a star or sun) which are still used in England, and with others in South-eastern Europe, proves conclusively that they are all evil-eye charms, the Latin *phaleræ*. The old English crescents already mentioned indeed match those represented on Trajan's column and other monuments. Taking this form as the beginning of the English series, and as having survived into our own time, it can be traced through a series of modern degradations consequent on loss of meaning, into mere ornaments decorated with a horse's head, a beer barrel, or a portrait of the Queen.

Dr. Tylor went into some evidence as to the origin of the moon-symbol in ancient magic, and hoped to be able to treat the subject methodically in a future paper.

Discussion.

Mr. G. M. Atkinson remarked that for some years back he had collected and drawn some 300 different forms of these horse decorations. He divided them roughly, first, into two classes—*Marks of Ownership*, as shields, crests, monograms, trade marks, &c.; and *Symbols*, the most important, and the commonest of these being a flat disc on the top of the head between the ears, which represents the sun, and a crescent on the forehead, for the moon. These are combined with stars, national emblems (as rose, shamrock, and thistle), acorns, hearts, lion, horse, and horse-shoes. A great variety of such forms combined still survive. These are also worn on the breast of the horse, on the martingale, generally in odd numbers, 3, 5, or 7, and are found also on the sides, usually on the left side just behind the shoulder. On the top of the head, smaller, but similar, symbols are found, the most frequent being little swinging bells; these are called "flyers," and tufts of hair are sometimes attached to them. The crescent form is also used on the harness of camels and elephants. It is found with the Roman antiquities in the British Museum, and in Mediæval times, in the Nativity groups, tapestries, and pictures, &c. Mr. Atkinson hopes to exhibit his collection of sketches at some future meeting of the Institute.

Mr. W. Greatheed thought the cresent-moon ornament might be referred to the cult of Diana believed to have been carried on up to a late date on the site of the present St. Paul's Cathedral.[1] If Diana was also the great huntress, huntsmen and others, to whom horses were valuable auxiliaries, would be likely to place them under Diana's protection by the use of her symbol. In the

[1] "Some have imagined that a temple of Diana formerly stood here, and when I was a boy, I have seen a stag's head fixed upon a spear (agreeably enough to the sacrifice of Diana) and conveyed about within the church with great solemnity and sounds of horns. And I have heard that the stag which the family of Bawd in Essex were bound to pay for certain lands used to be received at the steps of the church by the priests in their sacerdotal robes and with garlands of flowers on their heads. Certain it is this ceremony savours more of the worship of Diana and of Gentile errours than of the Christian religion." Camden's "Brit. Middlesex." *See too* Dean Milman's "History of St. Paul's." —W. G.

circle of worshippers this would ensure for them a general care and attention which would tend to avert the "evil eye," that is a secret malicious injury and even the premeditative gaze of the designing culprit.

Mr. WALTER COFFIN thought that if no other origin were known for the prophylactic virtues so commonly attributed to the horse-shoe, the close resemblance in form to the larger specimens exhibited of the models of conventional lunar crescents might suggest the possibility of some relation between very similar uses.

Mr. C. H. READ did not think that the frequent occurrence of the crescent upon horse-trappings could be held to connect the horse with Diana, as being sacred to that goddess, at least in the absence of some more direct evidence. Referring to a figure which Dr. Tylor had drawn upon the board, Mr. Read remarked that it seemed to represent the boat of the Egyptian Rā, or the sun, the boat being somewhat of the gondola form, with the flat disc of the sun standing in the middle. There did not seem to be any intention to represent the crescent moon under the form of a boat. Mr. Read deprecated the formation of a theory of evolution upon the evidence of so limited a series of these modern phaleræ, and one in which so many of the intervening links were entirely wanting.[1]

Mr. WALLHOUSE subsequently sent the following note:—

"With regard to the moon-shaped amulets against the evil eye described by Dr. Tylor at the meeting of March 12th, it may be mentioned that lunulæ or crescents formed of thin plates of metal, sometimes gold, are worn by children on the western coast of India, suspended upon the breast with the points upwards. Also respecting the 'Phœnician hand,' that symbol is used by Mussulmans throughout Southern India: impressions in red paint of a hand with outspread fingers are everywhere to be seen upon the walls of mosques, masjids, and Mussulman buildings. Standards, too, in the shape of hands, to which are given the names of Mohammedan martyrs, are carried in procession at the Mohurrum festival. In Ireland an arm and hand appear on the armorial bearings of the very ancient family of O'Sullivan, and an oath by the 'hand of O'Sullivan' is not to be broken by any one of the name; the old legend of the family runs:—

'Nulla manus
Tam liberalis,
Atque generalis
Atque universalis,
Quam Sullivanis.'

The figures of a mermaid and a galley appear with the hand on the armorial bearings, and the old family names refer to the sea and navigation, possibly pointing to a Phœnician origin."

The following paper, illustrated by the exhibition of specimens and sketches, was then read by the Author:—

[1] Some interesting references to the use of crescent ornaments on animals, &c., will be found in "Archæol. Journal," Vol. xvii, p. 146.—C. H. R.

On ANTIQUITIES *from* HUASCO (GUASCO) CHILI.

By C. H. READ, ESQ., F.S.A.

[WITH PLATES II AND III.]

THE specimens that I have the pleasure of exhibiting this evening form part of an interesting addition recently made to the Christy Collection; they were obtained from a firm of Liverpool merchants trading to South America, to whom they had been forwarded for sale by a correspondent in Chili, as a collection which had taken some years to form.

They are believed, however, to have all been found at one place, *i.e.*, Peña Blanca, near Huasco, 28° 30′ S. Lat.

Unfortunately, before the collection was offered to us, a selection had been made from it for the Museum at Liverpool. I mean that it is unfortunate, only as diminishing the scientific value of the series, and not that we grudge the Liverpool Museum what it has obtained. I felt so much interest in the specimens belonging to the Christy Collection that I asked the Committee of the Liverpool Museum to allow me to see their portion of the collection.

The Committee kindly granted my request and I am thus able to describe the whole of the collection. I will take first the specimens at the Liverpool Museum.

They comprise sixteen objects made of bronze or copper,[1] as well as a rough lump of the metal, which may tempt one to infer that the implements were made on the spot. The largest of these is a thin oblong piece of copper $4\frac{3}{4}$ inches by $2\frac{3}{8}$ inches, with a sharp edge along one of the longer sides, and a small squared hole, probably for attachment to a handle, at $\frac{3}{8}$-inch distance from the opposite side (Pl. II, fig. 1). This might be called a razor, the thinness of the metal rendering it capable of taking as keen an edge as the material will allow, and it is at any rate as well fitted for the purpose as are the analogous implements used by the Lake dwellers of Switzerland and France. Next are four objects of the celt or chisel class; one of them is of exactly the form of a flat Irish celt, but of diminutive size, 2 ins. long, fixed into a wooden handle, and bound with cord (fig. 4). The handle is imperfect, and the wood of which it is formed is very dry and friable from age; two of the others are similar in form, and are at present without handles, but having a long tang which may possibly have been fixed in a handle (fig. 2); the fourth, which is much oxidised, is of a different form; the blade in this instance is extended on either side of the stem, at a right angle, like the letter T upside down (fig. 3). These forms and especially the last, are well-known Peruvian types, and the

[1] Whether the metal of all the objects is copper, I cannot say, but many of them are certainly of that metal, and made by hammering.

British Museum already possesses one of each type from graves at Arica, and, there are several examples in our Peruvian series of the cutting implements, with a long narrow blade and the handle projecting at right angles from the middle of the back. These tools, I imagine, may have served for cutting up leather for garments, or, for instance, the leather sandals frequently found in graves in Peru.

There are only three fish-hooks of bronze, of simple form and without barbs (figs. 12 to 14), and in this they resemble the Peruvian examples. The late Dr. Charles Rau, in his excellent work on "Prehistoric Fishing," p. 324, quotes a statement of Squier, that he found with a mummy at a place a little south of Lima, a net, a number of copper sinkers, and some copper hooks, "barbed like ours." Dr. Rau could not discover where these hooks were preserved, and expresses considerable doubt as to the accuracy of the description, and I must confess that all the specimens that I have seen from Peru are unbarbed.

One of the bronze objects does not appear to me to be of the same period as the rest. It is a penannular ring, with an angular projection at one side, and might well serve as an earring (fig. 8). I conjecture that it is a native earring of modern date and perhaps of European make. This is to some extent confirmed by the presence in the collection of two small amulets of stone in the form of a clenched hand (fig. 5, 6). Amulets of this form are common in Italy at the present day, and have been there in use from Roman times, as charms against the evil eye. There can, I think, be no question that the specimens from Peña Blanca are, at any rate, not of pre-Spanish times, and they may be much more modern. The rest of the objects of bronze consist of seven small square plates $\frac{3}{4}$ inch across, with a central hole, and bent down on each side, so as to form a quartrefoil. These may probably have been sewn on a dress as ornaments.

The only other specimens worth notice, are two fish-hooks of shell, several small beads of turquoise and shell, a vessel of pottery, painted in colours, and a lip ornament of stone, precisely similar in form to those worn by the ancient Mexicans. The Peruvians were more addicted to ornaments for the nose than for the lip, and although several of the existing tribes of Indians in Brazil wear ornaments through the lip somewhat resembling the ancient Mexican, it is interesting to find so close a likeness at such a distance to the south.

The two fish-hooks are of a form commonly found wherever these are made of a single piece of shell, viz., a broad flat hook, more or less circular in outline (figs 9, 10). This shape results from the mode of manufacture, which is well shown in a series of figures in Dr. Rau's work (fig. 212); the first figure shows a plain circular piece of shell, the next has a hole broken through the

middle, the third has the edges ground, one side of the circular ring thus formed is broken through, and one of the ends is polished to a point, while the other is fashioned to allow of its being fastened to the line. The perfect hook from Peña Blanca is absolutely of the same form as those figured by Dr. Rau, as from the Island of Santa Cruz, on the Californian coast.

It may at first sight seem unlikely that a people having knowledge of metal should use hooks made with great labour from an apparently inferior material. It should be remembered, however, that hooks made from a brilliantly tinted nacreous shell, such as haliotis, or the pearl oyster, serve not only as hooks but as bait at the same time, just as English anglers use spoon-bait. The Maori fish-hook is often found lined on one side with a piece of bright haliotis, and the Solomon Islanders go still further, and make the shank of the hook in white shell, in the form of a small fish with two small discs of shell to represent its eyes. A fisherman furnished with hooks of this description would be in a much better plight if without bait, than if he had the most deadly of metal fish-hooks.

I have now noticed, in more or less detail, the portion of this collection in the Liverpool Museum. I should mention that the portion obtained for the Christy Collection is by far the larger of the two, and though it contains no object of bronze, and the specimens of pottery are unpainted, yet it forms a series by no means without interest. I have brought here a sufficient number to illustrate the whole of what we possess, and it will therefore be unnecessary to enter into any detailed description of the individual specimens.

The three vessels of pottery are somewhat unusual; the simple vase is remarkable for its rude make; the one with the handle (Pl. III, fig. 1) is also of an uncommon type and bears some resemblance to a European jug, but is, I think, of the same period as the third vase (fig. 2), as it is of similar clay and of an equal degree of finish. The shape of this last, however, is the most curious feature about it, and I should have been puzzled to account for its form but for the occurrence of much larger ones of the same kind on Ometepe Island, Nicaragua, where they were discovered by Mr. F. Boyle and Mr. Jebb in 1866, and examples are now preserved in the British Museum. These large pots were used as burial urns in New Granada, and the burnt body having been placed inside with such implements as seemed good to the survivors, a bowl-shaped vase was placed as a cover. It would not be surprising to find smaller vases of the same form associated with the larger ones, as indeed is the case; but the locality where the vase before us was discovered is separated from Nicaragua by a vast extent of country, and as far as I am aware they have

never been found in Peru. I would call attention to the little knobs which ornament this vessel. In the Nicaraguan urns there is generally a rude representation of the human figure attempted, by applying strips or knobs of clay to represent the features and limbs, which are here reduced past recognition. This seems to me therefore a precisely similar case to that of the vases from Cyprus, where a complete human figure is found on the vases, and in the modern examples it is reduced to a few raised dots.

Among all the objects comprised in this collection, I was most pleased with the interesting series of bone fish-hooks, of which I have brought several examples here this evening. I should perhaps state that I am responsible for their present form. When they arrived at the Museum the barbs were not placed with the shanks, but after some little consideration it seemed to me an obvious conjunction. It will be seen that these implements, the barbs especially, are very well made, and if, as I think, they were used for fishing, that must have been the chief pursuit of the community that used them. The barbs have evidently been attached by means of twine, and short lines have been scored on each barb and on the back of the shank to give the cord a firmer grip. The killing power of many of these hooks is increased by the lower point of the shank being as sharp or sharper than the barb itself, and this might be adduced as evidence that they were heads of javelins, and it is possible that some of them were so used. As against this theory I would point out that the largest specimen in the series (fig. 1), has the lower end of the shank divided into a fish tail which would, if anything, add to its power as a hook, but would certainly diminish its efficiency as a javelin. And further, in the fish-hooks from Peru, which are the nearest to this type that I know, the point of the shank is sharp and the barb is bound on in the same way as these must have been.

Fig. 1.
Fish-hook of bone, from Huasco.

It is unfortunate that Dr. Rau confined his work on fishing-apparatus to the north half of the American Continent, and beyond a few notes in the Appendix, did not mention any ancient South American specimens. I do not know of any others of the same material which

can compare with these before us in perfection of workmanship or in elegance of outline.

Among the other articles of bone are several spoons, some tubes apparently of bird bones, some instruments in form like marrow scoops, and a number of piercers, many of which have spatulate ends.

One is always tempted to suspect Spanish influence in examining South American collections containing objects which have European analogues. This has passed through my mind with regard to these spoons, and although their forms are not entirely unlike some which have been in use in Europe, yet I think the condition of the bone betrays a certain antiquity, at least as great as that of the other objects (fig. 3). The bird bone tubes are finished smoothly at the two ends (fig. 2), and I think were probably used to drink up some decoction, like the maté of Paraguay. The scoop-like objects I cannot assign to any definite use, unless indeed they are marrow scoops. The piercers present no unusual features, and were probably applied to any use.

Figs. 2 and 3. Tube and spoon of bone, from Huasco.

The stone implements comprise arrow-heads, scrapers, and borers, as well as some implements that, if found in England, we should call knives. These are generally carefully chipped and have an edge all round. The arrow-heads are all of known types, though we are more accustomed to them further north, *e.g.*, in Arizona, and they resemble those from that state both in their delicate finish, and in the selection of pieces of stone of brilliant or attractive colours. The borers are implements with broad flat butts, usually, though not always, rudely finished, and having a long point, quadrangular in section and carefully chipped on all sides (Pl. II, fig. 11). These Dr. Rau seems to have considered as tools for the making of shell fish-hooks, though they seem much too slight for the purpose. The only other objects worth remark are two utensils of stone, one of them possibly a net weight, the other a small grinding stone for colour, or for the finishing of bone implements. A lump of ochre was among the Liverpool Museum series, and this may possibly be the colour slab of the ancient artist.

Description of Plates II and III.

All the specimens figured in these plates were obtained from Peña Blanca, Huasco, Chili.

Plate II.

Fig. 1. Thin oblong knife, or razor, of copper, having a fairly keen edge on one side; near the back is an oblong hole, possibly for the attachment of a handle.

Fig. 2. Copper chisel, formed by hammering. It was, no doubt, originally fixed in a handle, like Fig. 4.

Fig. 3. Cutting implement of copper or bronze, now much oxidised. This form is commonly found in Peruvian graves.

Fig. 4. Chisel of copper, in make resembling Fig. 2. The wooden handle much decayed; the binding is of fine cord.

Figs. 5, 6. Two amulets of stone, in the form of a right hand clenched. This form of amulet has been in use in Europe, as a charm against the evil eye, certainly since Roman times, and it exists to this day in Southern Italy, as well as in other places. It is believed to have a phallic significance. It may be that these specimens, as well as Fig. 8, are of a later date, or at any rate of European origin.

Fig. 7. One of seven square plates of copper, bent into a pyramidal form, with a quatrefoil outline; a hole through the centre; perhaps an ornamental stud for the dress.

Fig. 8. A penannular ring of bronze, cast. This seems different in character from the rest of the find, and resembles the earrings worn by the modern Indians of Patagonia.

Figs. 9, 10. Two fish hooks of shell, of simple form. Fig. 10 is imperfect at the point, but shows the teeth at the back of the shank for attaching the line.

Fig. 11. Borer of chert; flat butt; the point carefully chipped into a quadrangular form. Implements of this form are believed to have served to drill the central hole in making fish hooks of shells, such as Figs. 9, 10.

Figs. 12, 13, 14. Fish hooks of copper, of simple form, without barbs.

[All the specimens figured in Plate II are in the Museum at Liverpool.]

Plate III.

Fig. 1. Pottery jug.

Fig. 2. Pottery urn.

[These vessels, and the objects represented by Figs. 1, 2, and 3 in the text are in the Christy Collection of the British Museum. The blocks used in Plate III, and those with the letter-press, have been presented to the Anthropological Institute by Dr. A. W. Franks, C.B., F.R.S.].

FIG. 1.

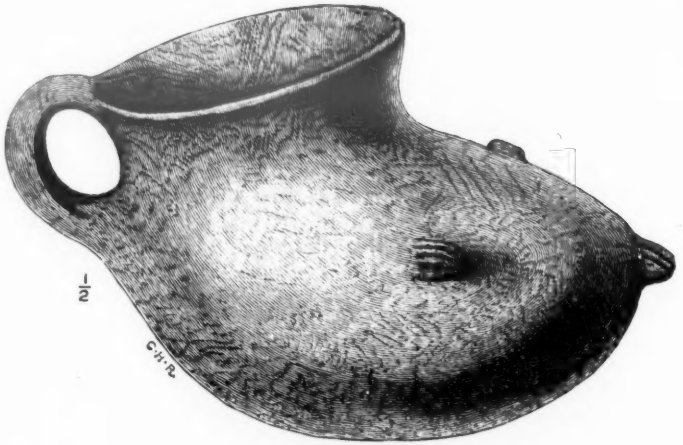
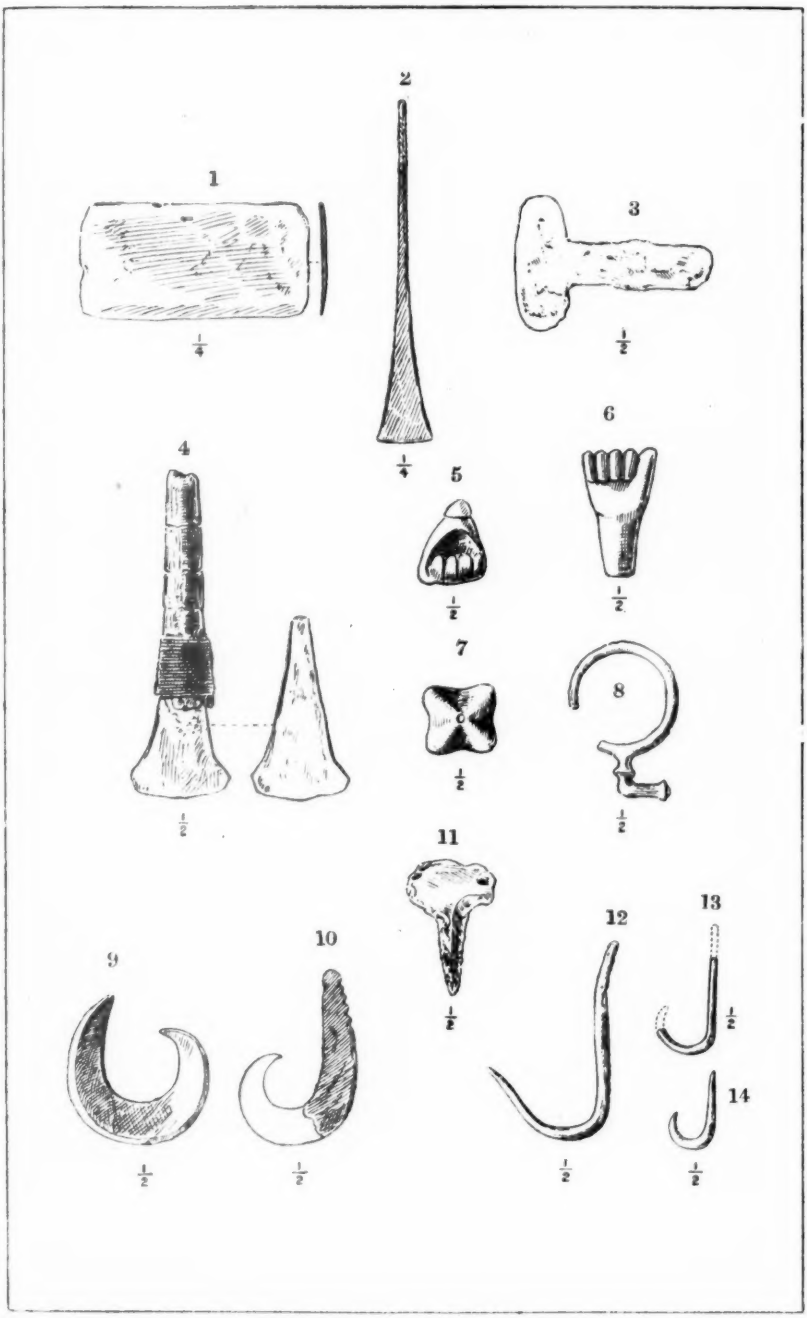


FIG. 2.

ANCIENT POTTERY FROM PEÑA BLANCA, HUASCO, CHILI.



OBJECTS FROM PEÑA BLANCA, HUASCO, CHILI.

MARCH 26TH, 1889.

E. W. BRABROOK, Esq., F.S.A., *in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From SIR RAWSON W. RAWSON, K.C.M.G.—Materiali per l'Etnologia Italiana raccolti per cura della Società Italiana di Antropologia ed Etnologia riassunti e commentati dal Dott. E. Raseri.

From the AUTHOR.—Social History of the Races of Mankind. Third Division; Aoneo-Maranonians. By A. Featherman.

—— Navajo Gambling Songs. By Dr. Washington Matthews, U.S.A.

—— A Remarkable Eskimo Harpoon from East Greenland. By John Murdock.

From the PUBLISHERS (Messrs. Trübner and Co.).—Serious Crime in an Indian Province. By Eustace J. Kitts, B.C.S.

From the UNITED STATES GEOLOGICAL SURVEY.—Mineral Resources of the United States. Vol. v.

—— Bulletins. Nos. 40–47.

From the ESSEX FIELD CLUB.—The Essex Naturalist. Vol. ii. Nos. 11, 12.

From the ACADEMY.—Bulletin International de l'Académie des Sciences de Cracovie. Comptes Rendus des Séances de l'année 1889.

From the SOCIETY.—Proceedings of the Royal Society. No. 276.

—— Journal of the Society of Arts. Nos. 1895, 1896.

—— Bulletin de la Société de Borda, Dax. 1889. Premier Trimestre.

From the EDITOR.—Nature. No. 1012.

—— Revue Scientifique. Tome xliii. Nos. 11, 12.

—— Bullettino di Paletnologia Italiana. Tomo v. N. 1 e 2.

EXHIBITION *of* PHOTOGRAPHS *of* MEGALITHIC REMAINS *from* JAPAN.

By W. GOWLAND, ESQ., F.C.S.

MR. W. GOWLAND exhibited photographs of megalithic remains from Japan, selected from a series made during his explorations of the dolmens and tumuli of that country in connection with an investigation into their history, geographical distribution, forms and contents, conducted by him in conjunction with Mr. W. G. Aston, Japanese Secretary of the British Legation in Tokyo. The dolmens and tumuli are generally found on the low hills which bound the plains, more particularly those of the chief rivers. They also occur on the plains, but are less numerous there. The tumuli are of two chief forms: 1st. A simple approximately conical mound generally elongated in the direction of the entrance of the dolmen; occasionally with terraced slopes and surrounded by a moat. 2nd. A double form of mound which is that of the imperial tombs of a certain era, and almost always possesses terraced slopes, and a moat, and frequently contains a dolmen. The tumuli of the first class are usually about 10, 15 or 25 feet in height, and generally each contains a dolmen. Those of the second class are much larger, being usually 400, 600 or 800 feet or more in length at the base, with a breadth of about two-thirds of their lengths, and a height varying from 25 to 50 feet or more. The dolmens consist generally of rudely rectangular chambers entered through a gallery of varying length. They are usually built of undressed stones of large size rudely laid together without mortar. A few only are of hewn stones. The roof of the chamber is almost always megalithic, in some consisting of a single stone. Their dimensions are variable, the galleries ranging from a few feet to 10, 15 or 24 feet in length, reaching in one example to 60 feet, and the chambers from 9 feet, in the smaller to 16, 18 or 22 feet in the common type. Some few are longer. Their entrances almost invariably are directed southwards, in a few rare cases westwards. Their contents are human bones (fragmentary), pottery, iron swords, spear and arrow heads, horse bits and metal ornaments of horse trappings and of armour, glass, stone and metal beads and vermilion. Some contain hewn-stone sarcophagi, and a few only sarcophagi of terra-cotta.

Some of the photographs represent rock-hewn tombs containing sarcophagi cut in the rock at the end or side of the chamber; and one a tumulus without a dolmen but with a stone sarcophagus projecting from its summit.

Only the chief features of the megalithic remains were described, an account of them in detail being reserved for a future joint paper by Mr. Gowland and his co-worker, Mr. W. G. Aston.

EXHIBITION *of* DRAWINGS *of* RUDE STONE MONUMENTS EAST *of* JORDAN.

By MAJOR C. R. CONDER, R.E.

MAJOR CONDER sent for exhibition some drawings of megalithic remains; and the Assistant-Secretary read the following extract from a letter on the subject addressed to the Secretary of the Anthropological Institute:—

"I send herewith drawings (seventeen plates) of some of the dolmens and other monuments which I discovered in the country east of Jordan, for exhibition on occasion of the subject being considered by the Institute.

"These drawings which I made all to the scale of 5 feet to the inch (except the first plate) are about to be published with full descriptions in the 'Memoirs of the Survey of Moab' (300 pp. quarto), now in the press, for the Palestine Exploration Fund.

"A general account of these discoveries will be found in my volume called 'Heth and Moab,' published by the Society; but the full account is reserved for the memoir above mentioned. The number of the examples which I investigated in 1881–2 exceeds 700 in all."

DISCUSSION.

Dr. MUNRO, referring to a question asked by Miss Buckland as to whether or not it was a fact that the megalithic monuments were situated near the sea, thought that there was some evidence to be derived from the study of their geographical distribution in Europe which supported the theory that the dolmen-builders were a seafaring people. Starting in the east these monuments were found in Syria and he was glad to find that one of the papers to-night was a valuable contribution to this part of the subject. Their existence in Palestine had been long known, but the details of their structure and distribution were very meagre. Major Conder's illustrations showed, however, that they were widely distributed to the east of the Jordan, and appeared not only identical in point of structure to those of Western Europe, but had some other special features in common, as, for example, cup marks. Passing westwards, these rude stone monuments were found on some of the islands and shores of the Mediterranean, especially in the Caucasian districts to the east of the Black Sea and the north-western shores of Africa. They were also found in Spain and Portugal, France, the British Isles, and the Scandinavian shores of the Baltic as far east as Pomerania. To the west of the Elbe they ran up a short way into the interior, and had a special development in Oldenburg and the Drenthe in Holland; but it was a very

remarkable fact that no dolmens were found in Central Europe. It was often maintained that in Western Europe these megalithic monuments were due to the Celtic people, but considering the geographical area to which they extended, he did not think this opinion could be maintained. However obscure the origin of the Celts was—and the little that was known pointed to Central Europe as the scene of their development in late pre-historic times—there was no possibility of making the area of their evolution in space and time to coincide with that of the megalithic monuments. In fact the two areas appeared to cross each at right angles.

The following Paper was then read by the Author, who exhibited, in illustration, a collection of nine cork models of the monuments under description, constructed by himself on a uniform scale of five feet to one inch:—

On RUDE STONE MONUMENTS *in the* COUNTRY *of the* CARNUTES (DEPARTMENT EURE ET LOIR, FRANCE).

By A. L. LEWIS, Esq., F.C.A.

THE country round Chartres is considered to have been that territory of the ancient Carnutes which, according to Cæsar, was the centre of the Druidic religion in Gaul;[1] and it has, I believe, been suggested as an argument against any connection between the Druids and the rude stone monuments that, whereas the latter are found in the greatest abundance on the west coast of Brittany, the Druidic centre of operations was, according to Cæsar, near Chartres. The fact, however, is that the Department of the Eure et Loir (of which Chartres is the chief city) has been full of rude stone monuments, so many of which still remain that it stands tenth with regard to the frequency of dolmens out of 88 French departments in a list published by M. de Mortillet in the "Materiaux pour l'Histoire Primitive et Naturelle de l'Homme," 1876, p. 318.[2]

[1] "Once a year they assemble at a consecrated place in the Territories of the Carnutes, whose country is supposed to be in the middle of Gaul." Cæsar, Book 6-13, Duncan's Translation.

[2]

1.	Aveyron (South)	325
2.	Morbihan (Brittany)	269
3.	Ardêche (South)	230
4.	Lozére (South)	135
5.	Finistêre (Brittany)	127
6.	Côtes du Nord (Brittany)	83
7.	Dordogne (South)	81
8.	Hérault (South)	79
9.	Vienne (Central)	77
10.	Eure et Loir	65
		1,471

These ten departments contain 1,471 out of 2,314 dolmens known to M. de Mortillet, or nearly two-thirds. Five out of the first eight are in the south of France and contain 850, or more than one-third of the total, and three are in Brittany and contain about one-fifth of the whole. The average of dolmens to a department is 26–7, or, as nineteen departments are stated not to contain any dolmens, 33–4 is the average, reckoning only those departments in which dolmens are known to exist. In either case the Eure et Loir with a total of 65 is far above the average. The dolmens of the Eure et Loir being also smaller and therefore more easily destroyed than those of the Morbihan, and the country now more cultivated, it is probable that the difference in number was originally not so great as would appear from M. de Mortillet's table.

My attention was particularly drawn to the remains in this district by an archæological guide book to France, published apparently about forty years ago, and compiled from various archæological works, reaching back in some cases perhaps as far as the last century, so that many things mentioned in it are not now to be found, while others have been unearthed which were not known at the date of its publication; the evidence of this old guide book (which for convenience I will hereinafter speak of as "Richard") as to monuments that formerly existed is, however, in some cases, of considerable value.

The country in which the remains I am about to describe are situated is a tolerably level plain, devoted largely to the growth of corn, and with few trees or buildings, these being concentrated mostly in the small winding valleys cut by the Eure, the Loir, and their tributaries, near the banks of which are also to be found most of the dolmens and standing stones. Many of the roads naturally follow the courses of the rivers and the windings of their valleys, but high roads have been made across the plain in almost straight lines between the various places of importance, as will be seen on looking at the maps now exhibited. An inspection of these maps will also show a number of places called Garennes or Varennes, both of which words are translated by the English word warren, showing that the old Celtic "gw" sound was once prevalent in this district, and that in some places one element in it has dropped out, while in other places the other element has dropped out, as in our own words ward and guard.

My first journey was to a village called Gellainville, about four miles south from Chartres, where, according to Richard, 12 blocks of rough millstone were arranged in an oval, of which the largest diameter was 21 metres, and outside which were other stones ranged without any particular order, but which I hoped might be found to conform to the general rules of the outlying

stones of our own circles; a small engraving of this circle, given by Richard, showed that a cross had been placed on one of the stones, and I hoped that this might have saved the circle from destruction. Dr. Topinard, whom I saw in Paris, said, however, that, if the circle still existed, he should have heard of it from M. de Mortillet, and he thought, therefore, that it must have been destroyed, and this appears to be the case, unless, indeed, some remains of it may be found in an impenetrable little thicket near the railway crossing, where I was told there were some stones, and into which I crept for a few feet, finding one small stone, but seeing no others, nor should I have been able to make a plan if I had seen any. I showed the engraving

"CROMLECH DE GELLINVILLE (CHARTRES)."
(Facsimile of engraving in "Richard.")

to various peasants, including (in the absence of their master) some old servants of the Curé, to whose house I went as a last resource; the only result was that I was directed to some crosses, but they were on modern pedestals, so I departed reluctantly across the plain to Corancez, a village three or four miles further south, round which, according to Richard, were numerous remains.

Half a mile south from Corancez there still exists a ruined dolmen or "Pierre Couverte," the capstone of which is 15 feet long from north to south, and 10½ wide; three of the stones which supported it remain in position, and two have fallen inwards; these formed two sides of the chamber, the other two sides of which have been removed, so that the capstone rests on the ground on the east side. This dolmen would seem to have been a sepulchral chamber, about 15 feet long, 10 wide, and 3 to 4 high inside; part of the mound which enveloped it still remains. While I was measuring and sketching this dolmen my son examined the loose soil under it, and found two small pieces of bone, which I now exhibit, and concerning which Professor Flower says:—"The smaller bone is from a human hand (fourth

left metacarpal), the other probably a piece of a human humerus, but in too fragmentary a state to be certain." It seems to me more likely that these are the last remains of some one interred in this tomb (whether of the great personage for whom it was constructed or another), than that they have drifted into it accidentally. From some heaps of stones by the side of the road from the dolmen to the village my son picked a perfect and well-chipped boring implement and two very good flakes of flint which I also exhibit. Richard mentions various remains between Corancez and Morancez, a village between it and Chartres, but, although I made various enquiries, all I could find was a solitary stone lying flat on the ground in a wood. The names of some of the places in the neighbourhood, however (as for instance, Berchères les Pierres and Pierre Pesant) support the testimony of Richard as to the former existence hereabouts of notable stones.

My next point of departure was Maintenon, about a mile south from which, on the left of the road to Changé and St. Piat, are three groups of stones, in a line almost north and south. These are called by Richard Pierres de Gargantua, but I could not find that the people have any special name for them now. The most northerly group consists of two standing stones, respectively 8 feet and 3½ high, about a yard apart, and forming, as they stand, a slightly curved line, perhaps a small segment of what may have been a circle; that side of the larger stone which would in that case have been the inward side, and which faces slightly east of north, has upon it irregularities and cavities which struck me as forming a figure resembling that which, when it occurs on Breton monuments, is called the "Aschia," or axe, but the stone is of so rough a nature, and the figure (if figure it be) so worn, that I could not determine whether it were really natural or artificial; no other stones remain to show whether there were a circle here or not, nor are any mentioned by Richard, who describes these two, saying that the larger is called the Pierre Droite, and was formerly about 10 feet high, with a pointed top, which had been broken, and it is in fact now about 8 feet high, with a flat top, on which a cross may possibly have been placed at some time or other. The second group, about 260 feet to the south, is a ruined dolmen, the capstone of which (14 feet long, by 12 wide, and 1½ thick) has broken in two, and sunk in the middle, being upheld by two supports about 2½ feet high at the south-east end, and one at the north-west end; its axis appeared to have been about 55 degrees west of north, but, in consequence of its having fallen and being occupied by bushes of an uncomfortably stiff nature, I could not get inside it; Richard calls it "le Berceau," and speaks of five supporting

stones, so that there are possibly two so overgrown that I did not see them; there are remains of the tumulus which, no doubt, completely covered it. The third monument of this group is about 360 feet further south, and appears to be the last remains of a sepulchral chamber, two of the uprights of which remain in position, seven feet apart, the capstone (20 feet long, by 6 to 8 feet, by 1½ to 2 feet, the breadth and thickness varying irregularly), rests upon these, the south east end of it resting also on the ground, and the north-west end rising 8 or 9 feet in the air in consequence; its axis appears to have been about 40 degrees west of north; Richard describes it, in the language of the French antiquaries of the old school, as an "inclined dolmen," but does not give any special name to it.

My last base of operations was Bonneval, a small but picturesque town on the banks of the Loir, about 20 miles south from Chartres, which is described by Richard as being in the midst of a large number of rude stone monuments. The chief group of these Richard says is at St. Maur, about three miles south-east, and there I found the remains of three sepulchral dolmens and some other stones, and from the ploughed land around them I picked some flakes of a cherty kind of flint which I now exhibit. The first of these dolmens which is reached from the village of St. Maur consists of a capstone (10 feet, by 6 feet, by 3 feet) supported about three feet from the ground on three other stones, the north-east side is closed by a stone (7 feet long, 4 feet high, and 2 feet thick) which Richard says was formerly a capstone, but which, for anything I could see to the contrary, was in its original position; but both this and the second dolmen, which is about 275 feet south-west from it, are so surrounded with hard thick bushes that it is difficult to make out all the details of their construction, even where the evidence of those details has not been destroyed. The second dolmen appears to have possessed two chambers close to one another, the capstones of which have both slipped to the ground on the side nearest to each other; the largest and most northerly capstone is 10½ feet long, 7½ feet wide, and 2 feet thick, and four of its supporters, which are from 3 to 4 feet high, remain; the smaller capstone is 7 feet long, 6 feet wide, and 1½ foot thick, and three of its supporters also from 3 to 4 feet high, are in position; the axis of these chambers is about east and west, and that of the first mentioned is about north-west and south-east. The third dolmen is 460 feet west from the second, and would seem to have been, when complete, a large chamber, about 4 feet high inside, and 9 or 10 feet square, roofed by two capstones (each from 8 to 10 feet long, 6 feet wide, and 2 feet thick) of which that to the south-west remains supported by three uprights, while others

standing or lying round complete the wall of the chamber on the south-west side; the north-east capstone has fallen and broken in two, and its overthrown supporters lie under and round it; two upright stones also stand outside the wall of the chamber—one on the north-west and one on the south-east side. Richard says it is surrounded by fifteen large stones, but I think this number includes all those which formed the walls of the chambers, and supported the roof; if not, there must have been a circle round the chamber at so small a distance as to be covered with it in the tumulus of which there are still some very slight remains; a row of upright stones has however been found buried in a tumulus in Brittany. About 460 feet from this third dolmen are two stones, 4 to 5 feet high, which seem to be in a straight line, nearly east and west with the third and first dolmens; and, about 180 feet north from these two stones, seven others lie in a heap, which may be the ruins of a dolmen *in sitû*, or may have been piled up there to disencumber the land; a line drawn from them to the second dolmen mentioned would pass very near the third, if not absolutely through it; there is a prostrate stone between the second and third dolmens, but not in line, and there may be one or two other odd stones about the neighbourhood.

The most perfect remain which I visited is on the opposite side of Bonneval, at a place a mile and a half away called Ouzenin, and is itself called la Planche de Beaumont, and Richard states that, according to tradition, legal sentences were formerly delivered there. This monument is what the French antiquaries have called a circular dolmen, and consists of eight supporting stones, of which only one has fallen, while the others uphold a huge capstone (15 feet by 12 feet, by 2 to 4 feet thick). The chamber formed by these stones is about 11 feet in diameter, and 3 feet high, there is a very slight trace of the mound in which in all probability it was once enveloped, but the inside of the chamber is not lower than the ground outside; the capstone and many of the others, both of this and of the other monuments described, are of a kind of conglomerate, containing great lumps of bad flint, and it is probably because of the poor nature of the stone that these monuments are smaller than those of Brittany and other places. They differ also from many of those in Brittany or elsewhere in being merely chambers without any gallery leading to them.

In a field on the way from Bonneval to the Planche de Beaumont are about twenty large stones, which seem to form an irregular circle, with, perhaps, the remains of an avenue; but as they are all prostrate, and as the ground is under cultivation, it is possible that many of them have been moved from their

original position. I picked up the scraper, now exhibited, in the field in which these stones lie. Two miles and a half beyond the Planche de Beaumont is the village of Alluyes, where are a fine church, the remains of an old castle, and, beyond these, by the banks of the river, the remains of a dolmen, consisting of the capstone (15 feet long, 6 to 9 feet wide, and 3 feet thick), one side of which rests on the ground, the other being held up by one supporting stone (3 feet high, by 3 feet by 1 foot), while another supporting stone of similar dimensions lies flat on the ground; its axis is about east and west, and the ground beneath is lower than that outside. About 160 feet north from this is a stone (2 feet high, by 3 feet by 1 foot), on a small mound, with a shallow trench 6 feet wide round it, inclosing a square space of about 25 feet each way; there are also some other small trenches and banks, which may, however, have been made to guide or to check a flow of water, as the river is close by.

In the fields between Alluyes and Bonneval, in which I searched for other monuments on my way back to the latter place, there are various collections of large stones, which look as though they were the remains of some of the other monuments mentioned by Richard, removed and piled together to clear them from the land.

I have now exhausted the list of the monuments which I actually saw but not that of those which exist or have existed in the Department. Of these I annex a list which I have compiled from the materials in my possession, but which is I fear far from complete.

List of Rude Stone Monuments in Department of Eure et Loir mentioned in Richard's "Guide du Voyageur dans la France Monumentale," about 1850 (*marked R.*), *Joanne's "Geographie d'Eure et Loir,"* 1887 (*marked J.*),[1] *and the French War Office Map,* 1883 (*marked M.*).[2]

Allaine. A fine dolmen called Grosse Pierre, two uprights and capstone, 2 m. 40 × 2 m. 24 × 1 m., with a hole in it; and six uprights, without capstone, belonging to another dolmen. (R.)

[1] One of a capital series of guides to the French Departments published by Hachette at one franc each.

[2] In some cases Richard and Joanne put the same monument near two different places, it being between the two, and Richard's descriptions are rather indistinct, so that I may have made some mistakes in compiling the list. Joanne has, I think, also copied from older authors, just as our own local guide-book writers do (the original source of their descriptions being sometimes to be found in publications of the last century), so that it may be doubted whether all the remains he mentions still exist, and the map, like our own Ordnance Map, is uncertain in its selection; of the two sheets I bought, one shows none of these monuments and the other does not show all, even the Planche de Beaumont being omitted from it.

Alluyes. Monuments mégalithiques à la Garenne des Clapiers (J.). These appear to be an "inclined dolmen," and four peulvens, or small upright stones, 1 m. 45 to 3 m. high (R.). Pierre Druidique between Alluyes and Montboissier (formerly called Houssay) (M.). This appears to be an "inclined dolmen," 4 m. × 3 m. × ·85 and 1 m. 65 high (R.). Dolmen, near Bassecour, and various peulvens and stones between Montboissier and Locmarice (R.).

St. Avit les Guespieres. Megaliths (J.). Monument Druidique, 1 kilo. south-east from (M.). Dolmen, three stones supporting a fourth 3 m. × 2 m. (R.).

Bazoches les Hautes. Dolmen (J.).

Berchères l'Évêque (query Berchères les Pierres). Menhir (J.).

Berchères sur Vesgre. Megalithic stone (J.).

Blévy. Megalithic stone (J.).

Bonneval. 2 kilos. east from, various stones and an inclined dolmen. 1 kilo. north-east at Bel Air, a number of stones (possibly those mentioned by me as being perhaps part of a circle on road to Planche de Beaumont) (R.).

Le Boullay Thierry. Peulven (J.).

Brezolles. Megalithic stones (J.).

La Chapelle Fortin. Dolmen de la Grosse Pierre (J.).

Châteaudun. Between it and Molitard an inclined dolmen 3·33 m. × 2 m. × ·65 m. on two supports. Between it and Brou, at St. Lubin d'Isigny, a peulven called Pierre de Merlise, 3 m. high. Near mill of Vilprovers, a circular dolmen 3 stones 1 m. 15 high supporting a capstone, and one not reaching up to it (R.).

Civry. Dolmen (J.).

Cocherelle. Inclined dolmen (R.), see Montreuil (J.).

Corancez. Megalithic stones (J.). A much mutilated dolmen, &c., 140 metres from it an upright stone (R.). (See account of dolmen *ante*).

Dampierre sur Avre. Megalithic stones (J.).

Ecluzelles. Demi-dolmen and peulven called "Pierre des Druides." (J.).

Fontenay sur Conie. "Pierre Druidique" 1 kilo. south-east from, two "Pierres Druidiques" 2 kilos. north-east from (M).

Gellainville. Megalithic monument (J.). Ellipse of 12 stones, largest diameter 21 metres, other stones outside (R.). This does not appear to exist now, see *ante*.

Grandville-Gaudreville. Two dolmens called (1) Le Loup de Thionville or Grosse Pierre; and (2) Gres de Linas (J.).

Illiers. "Pierre Druidique" 2 kilos. south from (M.).

St. Jean Pierrefixte. Megalithic monument and St. John's fountain (J.). N.B. The name of this commune appears to be derived from the megalith, and the fountain or spring was probably an attraction before St. John was heard of in this country. A. L. L.

Loigny. "Pierre Antique," 1 kilo. south from (M.).

St. Maixme Hauterive. Megalithic stones (J.).

Marboué. Peulven at St. Lubin d'Isigny (J.). (See Châteaudun).

Margon. Megalith (J.).

St. Maur. Peulven, two dolmens, and berceau, or altar; also Fort Lamotte (J.), Monuments Celtiques (M.). Peulven, three dolmens, and near Château of Memillon, a mound with ditch and stones, called Fort Lamotte (R.). See description of dolmens *ante*.

Méréglise. Megalithic stone (J.), "Pierre Druidique," 1 kilo. north-east from (M.).

Méroger, Mézieres. A number of stones between these where legal sentences were delivered (R.).

Mervilliers. Demi-dolmen, called du Mesnil (J.). Le Mesnil marked on (M.), apparently as a place. Inclined dolmen, called Pierre de Mesnil, 4½ m. long, one end buried (R.).

Montainville. Dolmen (J.). A circular inclined dolmen, two capstones (3 m. × 2 m. × ·65) and several supports (R.)

Montboissier. Megalithic monuments near farm of L'Ormorice (J.). "Pierres Druidiques" (M.). Stone 2 m. 65 high at L'Ormorice and sundry stones mentioned under Alluyes (R.), and see Moriers.

Montreuil. Dolmen at Cocherelle, four stones overturned (J.).

Morancez. Megalithic monuments, *of which the stones have for the most part been used in making roads* (J.). Pierre Piqué, 2½ mm. high, and a number of flat stones; three large slabs in a garden, and another dolmen in a garden, consisting of five uprights supporting part of capstone, the other part being broken off and lying on the ground, called the Pierre Tournante; flat stones between Morancez and Corancez, and four stones at L'Abbaye de l'Eau (R.). The statement of (J.) explains why I could not find these. A.L.L.

Moriers. Dolmen de la Pierre Couverclée (J.). Inclined dolmen, 3 m. 35 × 1 m. 65, with one upright, in field of Grosse Pierre, Pierre Couverclée (Montboissier), inclined dolmen in middle of field, 3 m. 33 × 2 m. 33 × ·65 (R.). It is not quite clear to me whether these are two dolmens, or two descriptions of the same one. A.L.L.

Neuvy en Dunois. Dolmen de la Couvre Claire (J.), Pierre Druidique, 1 kilo. north from (M.).

Nottonville. At extremity of park of Château de la Brosse a dolmen called Palet de Gargantua (J.). Pierre Druidique (M.), also mentioned by (R.).

Peronville. Megalithic stones (J.).

St. Piat (Changé). Megalithic monuments (J.). Menhir called Pierrefitte, dolmen called le Berceau, two upright stones, and dolmen (see description of these *ante*). Dolmen called Chapelle du Martyre, dolmen called Pierre fritte, near Mévaisin (R.).

Plancheville (south of). Four or five large stones called Pierres Main Verte, where people go to render homage to the Chapter of Chartres Cathedral (R.).

Prudemanche. Megalithic stones (J.).

Prunay-le-Gillon. Dolmen (J.).

Saumeray. Ruined dolmen (J.). Ruined dolmen on left bank of Loir, on road from Illiers to Bonneval; at Montemain an inclined dolmen (one stone 2 m. 60 × 2 m. 30, resting on two others; towards Alluyes a peulven and some other stones (R.).

Thimert. Megalith (J.).

Toury. Dolmen (J.). Dolmen, capstone 3⅓ metres long, resting on one stone, 1 m. 15 high, called Pierre de Gargantua (because thought to be erected by this giant) (R.).

Trizay les Bonneval. Near mill of Fricot a gigantic dolmen 14 metres round (J.). Planche de Beaumont near mill of Fricot (R.). See description *ante*.

Ver les Chartres. Megalithic stone of Pierre Pesant (J.). A very large dolmen, much mutilated and buried nearly to level of platform (R.). Pierre Pesant marked on (M.), but on enquiry I was told there was no stone there, and that it was only the name of the place. A.L.L.

Vert en Drouais. Megalithic stones (J.).

Villiers St. Orient. "Pierre Druidique" 2 kilos. south-west from (M.).

Vitray-en-Beauce. Near Beauvoir, a megalithic stone (J.). "Pierre Celtique" (M.).

Voves. Dolmen de la Pierre Levée (J.), "Pierre Druidique" 2 kilos. south from (M.). I was told that this was one stone supported by another (presumably a capstone with only one supporter left), but too far for me to get to while waiting for train. A.L.L.

Ymeray. Pierres megalithiques (J.).

Ymonville. Pierre megalithique (J.), 2 kilos. south from, Pierre Druidique (M.). An inclined dolmen, two upright stones one metre high supporting capstone 2 m. × 1 m. 78 (R.).

Mr. J. Jacobs then read the following Paper:—

On the COMPARATIVE ANTHROPOMETRY *of* ENGLISH JEWS.

By JOSEPH JACOBS and ISIDORE SPIELMAN.

(WITH PLATE IV.)

In the present paper, we give the results of a number of anthropometric observations on English Jews of various classes carried out on lines as far as possible parallel to Mr. Galton's classical experiments at the International Health Exhibition, 1885. The measurements were made in the first instance at the Jewish Working Men's Club, Great Alie Street, E., the Committee of which was kind enough to grant us the use of a room for several weeks, which was fitted up, as nearly as circumstances would permit, in a manner similar to Mr. Galton's Anthropometric Laboratory at South Kensington. Considerable interest was shown by the members of the Club, of both sexes, a large number of whom submitted themselves to the somewhat wearying process of being tested and measured.

After some time the laboratory was moved to the West End where a number of the Jews and Jewesses inhabiting that quarter were good enough to go through it and submit to the various tests. The results were in each case written in duplicate on a printed form, one copy being torn off and presented to the examinees as some slight return for their kindness.

Great assistance was given throughout by Mr. and Mrs. Ernest Franklin, while Mr. Lissack, the Honorary Secretary of the Club, facilitated our work in every way in his power.

Our apparatus was modelled after those used by Mr. Galton at the Health Exhibition in order that our comparisons might be as correct as possible.

The measurements and tests taken were:—

Height standing without shoes.
Height sitting.
Keenness of sight.
Judgment of eye.
Colour sense.
Hearing; highest audible note.
Breathing power (spirometer, graduated cubic inches).
Strength of stronger hand.
Strength of pull.
Weight in ordinary indoor clothing.
Chest circumference.
Colour of eyes and hair.

Besides these we took measurements of the length and breadth of head, for the most part with ordinary callipers graduated

on the French scale; but towards the end of our investigations we devised an instrument which might be adopted by anthropologists.

We found that this head measurement could be more conveniently taken when the "subject" is in a sitting position and directly after the sitting height is obtained. The apparatus consists of a flat piece of board about 12″ × 9″. Directly beneath this, two guides are suspended about 9″ apart, so that the widest head may easily go between them. A metal socket moves up and down on each of these guides and is made to fit tightly by means of springs. Attached to the sockets is a frame of steel wire $\frac{3}{16}$″ thick, and which in held in a perfectly horizontal position. This wire is bent in such a way as to make the "tour of the face," resting like a spectacle frame without eye-holes, upon the lower socket of the eye.

The measurement is taken thus:—The board is brought down horizontally upon the vertex of the head of the person sitting, so that the head comes between the guides. The sockets carrying the frame are then brought down the guides until the curved part of the frame rests upon the lower socket of the eye, and the sides of the frame are level with the orifice of the ear. This compels the head to be held in the requisite position for taking this measurement, and the reading upon each guide (which is graduated in centimetres and millimetres) should be identical. The wire may be pressed towards the ear when measuring narrow heads and without losing the horizontal position.

Altogether, by the methods described above, we took on an average 21 measurements on each of 423 individuals; altogether, 8,863 measurements, a number sufficient to give trustworthy results, as the persons tested were themselves average samples of the two chief classes into which English Jews may be considered as divided. These may be described as "West End Jews," the better nurtured inhabitants of the West End and descendents for the most part of Jews who have been long settled in this country, and "East End Jews," the less fortunately situated Jewish dwellers at the East End, the parents of whom in many cases were born abroad. As far as possible it was desirable to get out results for each of these classes separately, and for the most part we have done so. By this means we are enabled to make our results bear directly on one of the burning questions of anthropology, that of nurture *v.* nature, to use Mr. Galton's convenient phraseology. For the "West End Jews" are ultimately derived from exactly the same race and class as the East End Jews, so that differences of race are totally eliminated, and we are enabled to trace the influence of nurture pure and simple. The problem of deter-

mining purely "racial characteristics" will be considerably simplified if we can in this way determine what may be described in contradistinction as "nurtural characteristics." It is in this connection that our investigations appear to us to have a wider outlook than ordinary anthropometric results.

Our method has been to contrast West End and East End Jews so as to get at the influence of nurture. But besides this, there might be a residuum of race influence which could only be tested by comparison with another race. West End Jews might differ favourably in height from East End Jews and yet all Jews differ unfavourably in height from Englishmen, owing to original difference of race. Another comparison was therefore necessary in order to fully test our results and that was with Englishmen generally.

Here we have Mr. Galton's results before us as a standard, and we have accordingly placed the results for all the Jews examined by us side by side with his results for the English men and women examined at the Health Exhibition. We have throughout adopted Mr. Galton's method of "percentiles" (see "Journ. Anthrop. Instit.," xiv, 1885, p. 275) and have given the 5th, 25th, 50th, 75th and 95th percentile in each case. The extremes give what we proposed to call the "range" while the middle number giving practically the "medium" or "average" result, though for some purposes there is a slight difference between the two. Finally we have worked out similar calculations for the 50 or so Sephardic Jews, descendents of the Jews expelled from Spain and mostly descendants of the oldest Jewish residents in this country.

With these preliminary remarks we may now at once present a table summing up our main results. We give also, in Plate IV, a set of curves showing the results of these measurements, and comparing them with Mr. Galton's taken at the Health Exhibition.

The curves commence on the left hand side at the minimum, and end on the right hand side at the maximum capacity, whilst the perpendicular lines, where cutting the curves denote the 5th, 25th, 50th, 75th, and 95th percentile measurements. Of course the most important of these perpendicular lines is the centre one, which shows the mean or average of each class as represented by the curves. We need scarcely add that these curves merely express in graphic form the information contained in Table I.

The black solid curve represents Health Exhibition male measurements.

The bar curve, *all Jewish* measurements for comparison.

The star curve, West End Jews.

The dotted curve, East End Jews.

The dot-and-bar curve, the Sephardim (Spanish and Portuguese Jews).

Comparative Anthropometry of English Jews. By Joseph Jacobs, B.A., and Isidore Spielman.

TABLE I.

Subject of Measurement.	Sex.	"East End" Jews.					"West End" Jews.					Sephardic Jews.					All Jews.					Health Exhibition Measurements (1885).				
		5th	25th	50th	75th	95th	5th	25th	50th	75th	95th	5th	25th	50th	75th	95th	5th	25th	50th	75th	95th	5th	25th	50th	75th	95th
Height standing, without shoes, in inches ...	Male ...	60·2	63·0	64·3	66·0	68·0	63·4	65·5	67·5	69·4	70·4	62·6	64·0	65·0	68·0	70·0	60·8	63·4	65·0	66·8	70·0	63·2	66·1	67·9	69·6	72·4
Ditto	Female	57·3	58·5	60·3	61·2	63·0	59·0	60·7	62·0	63·6	66·5	...	...	...	...	...	57·5	59·4	60·8	62·3	65·5	58·9	61·7	63·3	64·9	67·3
Height sitting, from seat of chair, in inches	Male ...	31·2	33·0	34·0	34·7	36·2	33·5	34·7	35·7	36·6	37·2	33·5	33·8	34·0	35·8	37·5	32	33·5	34·7	35·5	37·1	33·6	35·1	36·0	36·9	38·2
Ditto	Female	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30·2	31·5	33·0	33·5	34·2	31·8	33·1	33·9	34·7	36
Span of arms, in inches	Male ...	63·0	65·0	67·7	69·0	70·7	64·0	67·5	70·0	72·0	74·0	63·7	65·5	67·0	69·7	73·0	63·5	66·0	68·0	70·0	73·0	65·0	67·7	69·9	71·8	74·8
Ditto	Female	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	57·0	60·0	61·5	63·0	64·0	58·6	61·2	63·0	64·9	68
Weight in ordinary indoor clothing, in lbs.	Male ...	...	...	...	...	...	...	...	...	...	...	117	122	139	166	187	101	127	139	150	163	121	133	143	153	172
Ditto	Female	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	107	110	119	145	154	102	112	128	134	149
Breathing capacity, in cubic inches	Male ...	...	...	...	...	...	...	...	...	...	...	140	150	190	220	235	125	175	200	235	270	161	193	219	242	290
Ditto	Female	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	100	112	130	145	165	92	119·5	138	157·5	186
Strength of pull, as archer with bow, in lbs.	Male ...	...	...	...	...	...	...	...	...	...	...	60	67	70	79	82	50	61	70	82	90	50	65	74	81	96
Ditto	Female	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	19	32	40	45	50	30	35	40	45·5	54
Strength of squeeze of stronger hand, in lbs.	Male ...	...	...	...	...	...	...	...	...	...	...	65	70	89	93	94	62	74	82	92	104	67	77·5	85	93	104
Ditto	Female	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	43	48	55	65	66	36	45	52	60	72
Keenness of sight, reading distance, in inches	Male ...	0	13	19	25	29	7	19	29	35	38	13	19	25	36	39	7	15	19	29	35	13	21	25	29	34
Ditto	Female	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	13	23	29	36	10	17·5	24	28	32

NOTE.—Ages and Units as in Mr. F. Galton's Measurements.
5th, 25th, 50th, 75th, 95th per centiles.

The lighter curves denote the corresponding female measurements in each case.

It will be observed that the black curve is almost invariably at the top of each table both in minimum and maximum measurements, and frequently in the mean measurement; but Mr. Galton's Health Exhibition visitors are beaten in two places: their maximum is inferior in weight to the *Sephardic* Jews, and in keenness of sight to:—The maximum of all Jews and Jewesses, Sephardim and West End Jews. The East End Jews are there, as in all of our measurements, inferior to all but those of the females.

The *Sephardic* Jews are the highest in maximum in weight measurement. They are the *highest* also in keenness of sight test, and their mean is good in both cases. In strength of squeeze they are the highest in the mean, and lowest in minimum and maximum. In strength of pull, they are the highest in minimum, and lowest in mean and maximum. In span, their average is the lowest, but recovers towards the maximum. In height, they retain the 3rd place in maximum, minimum, and mean, the Health Exhibition males and "West End" Jews being superior. In breathing capacity, the same is the case.

The *West End* Jews are highest in average in keenness of sight test, as well as in span of arms. In height, sitting and standing, they retain an even position directly after Health Exhibition male measurements.

The *East End* Jews are practically the lowest everywhere in minimum, maximum, and mean.

The *Jewesses* are superior to the *Jews* in keenness of sight, both in average as well as in minimum and maximum. In this test they are above the Health Exhibition males and females, the "All Jews" maximum, and the East End Jews. The Jewesses are above the Health Exhibition females in minimum, maximum, and mean of strength of squeeze. They are, however, inferior to them in breathing capacity. They are again superior in weight to their Health Exhibition sisters; but inferior in height, sitting and standing, and in span.

The general result of this table is tolerably clear. English Jews in general compare unfavourably in almost all anthropological measurements with the class of Englishmen who visited the Health Exhibition. But if we take the West End Jews, who were probably of very nearly the same class as the Exhibition visitors, the inferiority vanishes almost entirely. Thus, to take an example, while the mean height of "All Jews" was only 65 inches, against 67·9 inches for Mr. Galton's subjects, an inferiority of nearly 3 inches, the West End Jews averaged

67·5 inches against 67·9 inches, an almost inappreciable difference. It is obvious that nurture has made the difference between the heights, both of West End and East End Jews, and between Jews and Englishmen. Are we then to dismiss height altogether from our tests of race? Is it only a difference of nurture that makes the contrast between the Hottentot and the Patagonian? Not altogether, as we can see by scrutinising a little more closely the figures we are discussing. The "means" are much the same among the well-nurtured Jews and the visitors of the Health Exhibition, but "the range," as we have called it, is different. Thus, to take the upper limit, while Englishmen pure and simple reached 72·4 inches, all Jews reached 70 inches and West End Jews reached 70·4 inches.

Here we have seemingly an instance where long continued bad nurture through many generations shows its influence on the measurements of well-nurtured descendants not by reducing the average, but by restricting the range and preventing any very great variations from the artificially reached average.

If this example could be taken as typical, the real test of races is rather to be found in the extreme cases than in the mean. As a matter of fact this is practically the way in which popular judgments about races is made. And yet even in the very case before us we have observed a striking instance of the permanence of race types, even in so variable a thing as height, which seems at first sight to depend only on nurture. In Mr. Jacob's paper on "The Racial Characteristics of Modern Jews" (Journal, Vol. xv, 1885, p. 34), he gives the measurements of height for nearly 13,000 Jews, which average 161·2 millimetres or 63·47 inches. This is remarkably near the 63·75 inches which is given in our table as the mean height of all the English Jews examined by us. Altogether it would appear that while anthropological measurements depend on nurture, social conditions tend to preserve the same kind of nurture in various races, and so keep the racial measurements constant. If any change of the conditions of nurture occur, pre-existing conditions of bad nurture tend to lower the "range" in well-nurtured descendants rather than to depress the average. The extremes, say the 95th per centile, are thus more trustworthy racial tests than the average or mean.

Applying this test to our general results, we find inferiority all along the line in the general results of English Jews as compared with other Englishmen, except in two particulars, viz., weight in Jewesses and keenness of sight in both sexes. It is curious that while the average weight of Jewesses is 9 lbs. below that of other Englishwomen, the highest weight reached is 5 lbs. more in the cases of the Jewesses, a confirmation of the

popular impression of the superior solidity of the Jewess. Turning to keenness of sight, we find again that while the Jewish average is inferior, the higher limit is superior to the extent of 1 inch in the case of males, and of no less than 4 inches in the case of females. A "Jew's eye," in its literal sense, seems therefore a valuable possession so far as keenness of sight, though in its appreciation of colour it is far from being so valuable, as we shall see.

Having discussed such of our results as can be compared with Mr. Galton's, we may now proceed to give the additional information we have obtained and compare them with the results of Mr. Jacob's paper just referred to. Thus taking the colour of hair and eyes, we may compare the results reached as regards English, German, Austrian, and Russian Jews, and may contrast them with the Jews of Spanish descent known as Sephardim.

Colour of Eyes and Hair.

Table II.

	Eyes.			Hair.			
	Blue.	Grey.	Brown.	Blonde.	Brown.	Black.	Red.
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
English Ashkenazic Jews ...	11·1	30·1	58·8	25·5	52·5	21·3	0·7
English Sephardic Jews	21·3	11·9	66·8	11·9	61·6	26·5	0·0
Prussian Jews	18·7	27·8	53·5	32·4	55·5	11·6	0·5
Austrian Jews	23·5	30·6	45·9	27·0	55·4	17·0	0·6
Russian Jews	23·0	24·1	52·9	23·2	59·2	13·1	4·5

It will be observed that the number of blue-eyed English Jews is very small, viz., only 11 per cent. (as indicated by the centre line of figures). The Sephardim show 21 per cent. Taking the blue and grey eyes together *as light coloured eyes*, they reach as much as 37 per cent., as against an average of about 50 per cent. in comparison with their foreign brethren, Prussians, Austrians, and Russians.

The main point in the results concerning hair is the higher proportion of absolutely *black* hair among *all English* Jews, than among those of Prussia, Austria, and Russia. The Sephardim have the largest amount of *black* and the smallest of *blonde* hair, and we did not find any example of *red* hair among them.

Considering the absence of any absolute standards for these colours, the results are tolerably uniform, except as regards two points which are probably connected together, the less proportion of blue eyes and the greater proportion of black hair among English Jews as compared with their foreign brethren.

This may possibly be explained to some degree by the fifth class of Jews, which we have included in the above table. The Sephardim or Jews descended from the refugees from Spain after the expulsion in 1492, are generally darker in complexion, and have darker hair than other Jews, as can be seen from the above table, or still more decidedly from the table given by Dr. Beddoe at the end of his paper on the "Ethnological Characteristics of the Jewish race" (Ethnol. Trans. 1869). Now our measurements included nearly 50 Sephardim, and doubtless others who had Sephardic blood in their veins, so that the black hair of English Jews may be referred to the greater admixture of Sephardim, who do not exist elsewhere to any extent in Northern Europe (except in Holland).[1] On the other hand, the paucity of blue eyes among English Jews cannot be accounted for on this ground, as the Sephardim do not differ materially in this respect from the rest of Jews. We suspect that a confusion of nomenclature has crept in here, and that we were perhaps more rigid than the foreign observers in restricting the term blue to the purest shade of that colour.

While on this point, we may bring in our results as to the colour blindness of English Jews, which is perhaps the most marked characteristic we have reached. This was tested by an instrument exhibiting strips of wool, among which are four with a green shade, and the subject has to select these by placing pegs opposite to them. However the fact is to be explained, the Jews in our experiments showed a remarkable inability to undergo this simple test, as is shown by the following table, which gives the percentage of failures.

	East End.	West End.	All.	Sephardim.
Jews	14·8	3·4	12·7	13·4
Jewesses	—	2·1	2·0	0

Previous inquirers have observed the inferiority of the Jewish race in this respect, but the results reached far exceed any

[1] It is to be remarked, however, that this admixture is only of recent date, both branches of the Jewish race having been practically endogamous.

previously reached, which average about 4 per cent. for Jews, whereas our results are more than three times as large. It is possible that in a few instances the directions given were not understood, and the mistakes were rather misunderstandings. But it was too obviously plain in many instances where the subject declared that he could not see any difference between brick-red and pea green, and the fullest allowance for misunderstandings would not reduce the percentage to anything under 10 per cent. The causes of this startling defect are probably to be found in the long continuance of Jewish life in cities, where so much less colour and especially so much less green is to be met with. Of its effects we may refer to two: the absence of any painters of great ability among Jewish celebrities, and the want of taste shown by Jewesses of the lower grades of society in the choice of materials for dress, &c. Where there is so large an amount of total colour blindness, there must also co-exist a still larger proportion of dulled sense of colour and a general lack of interest in the delights of colour, especially in its more refined forms. It seemed to us worth while calling attention to this defect, as it is probable that early training can in some measure overcome it, and it is clear that colour lessons should form part of every Jewish child's training.

We may now pass to another measurement in which Jews are generally credited with inferiority and not without reason. We refer to the girth or circumference of chest which is regarded by some anthropologists as of such importance that they calculate from this the "index of vitality." Unfortunately, we cannot in this case compare with Mr. Galton's results, but it is at any rate reassuring to find that English Jews in this respect compare somewhat favourably with their foreign brethren; their average being 35 inches against 80 cm., or 31·5 inches for 8,000 foreign Jews. Here again the influence of nurture is shown by comparing the measurements for East and West.

Percentiles.	East End.	West End.	All.	Sephardim.
5th, 50th, 95th ..	32–35–39·5	34–36–5–41	32·5–35–40	34–36–39–5

It may be observed that in this important characteristic the Sephardic Jews do not show to any advantage, as it must be confessed they do in most of the measurements in Table I. Except in span and breathing capacity, the Spanish Jews show a slight but marked superiority over their Ashkenazic co-

religionists as the rest of Jews are called. It is a point worthy of notice that the three points of Sephardic inferiority, span, girth, and breathing capacity, have to do with the lungs, and would seem to indicate a lower "index of vitality" among the Spanish Jews. They certainly seem to be dying out, and no longer possess the pre-eminence among Jews that they once did. It would be worth while inquiring whether phthisis is to any appreciable extent more frequent among them than among other Jews.

We now pass from these bodily measurements to those of the head on which we have collected materials greater in number than any observer who hitherto dealt with Jewish craniometry on the living subject. We may sum up the whole material at present available in the following table, in which we have kept to the older names and proportions (mesocephalic = 77·8 — 80).

No.	Index.	Dolicho-	Meso-	Brachy-cephalic.	Observer.
67	82·2	19·4	26·9	53·7	Dybrowski.
100	83·2	3·0	11·0	86·0	Blechmann.
313	83·5	4·8	10·9	84·3	Kopernicki.
363	80·0	28·3	28·3	47·4	Jacobs and Spielman.
51	—	17·0	34·0	39·0	Sephardim.

From this it would seem that English Jews are far more long-headed (dolichocephalic) than those on the Continent. This may be partly explained by the fact that our results include some Jewesses and a few lads whose undeveloped crania would tend to lower the average.

But there is, we believe, another explanation which will account for the phenomenon without supposing any deterioration on the part of English Jews, if deterioration it is to be long-headed physically. There might be two men whose cranial index was 75, but the one might have a skull 15 × 20 centimetres, the other 18 × 24. It is obvious that the latter has a larger receptacle for his brain, though he may have the same cranial index. A better test of this "capacity" would be to adopt the plan followed by Mr. Galton in his treatment of Dr. Venn's craniometrical results with regard to Cambridge students. He multiplied height, breadth, and length of skull together, and thus obtained what might be termed a measure of the "knowledge box" of his subject.

Unfortunately, we were unable to take the height of skull,

and could not therefore make the full correction. But we have multiplied together length and breadth, and thus obtained what we might call the "foundation" index of our subjects' skulls. On arranging these as before with the mean between minimum and maximum, and contrasting these with results of the cranial index, we obtain some very light-giving results, which are of sufficient interest to deserve some minute attention being paid to them.

"*Foundation Index*" *of Jewish Heads* (*5th*, *25th*, *50th*, *75th*, *95th per centiles*).

TABLE III.

	5th	25th	50th	75th	95th
All English Jews and Jewesses	24·9	26·6	28·0	30·2	32·0
Sephardic Jews	25·8	27·6	28·7	30·4	32·2
West End Jews over 22 years of age	28·5	29·2	30·4	32·0	32·0
West End Jews under 22 years of age	27·5	28·3	29·6	30·0	32·8
East End Jews over 22 years of age	25·2	27·5	27·9	29·2	32·0
East End Jews under 22 years of age	24·0	26·6	27·7	29·2	31·5
West End Jewesses	25·2	26·8	28·5	29·6	32·0
East End Jewesses	24·6	26·1	27·5	28·5	29·5

Here we observe that while the cranial index of the West End Jews indicates dolichocephalism, and, therefore, it would seem inferiority, their "foundation" index would seem to go on all fours with their presumed superiority in intellectual capacity. We find, too, that this index increases slightly with age, that it is inferior among females in the West End, but only slightly so among females in the East. So far then as any knocking at the skull can give any clue of the value of what is within, the "foundation" index would seem to answer that purpose much better than the cranial index, and is much simpler to get at than Mr. Galton's tridimensional "knowledge box." We append a table which gives at once by merely reading off in centimetres length and breadth of skull, both "cranial" index and "foundation" index.

"Cranial" and "Foundation" Indexes given in centimetres.

Length.	Breadth.						
	14	14½	15	15½	16	16½	17
17	82·3	85·4	88·2	91·3	94·2	97·0	100·0
	23·8	24·6	25·5	26·4	27·2	28·0	28·9
17½	79·9	82·8	85·5	88·5	91·3	94·2	97·1
	24·5	25·4	26·2	27·2	28·0	28·9	29·7
18	77·7	80·5	83·4	86·2	88·9	91·6	96·4
	25·2	26·1	27·0	27·9	28·7	29·7	30·6
18½	75·7	78·3	81·0	83·7	86·4	89·2	91·9
	25·9	26·8	27·7	28·7	28·6	30·5	31·4
19	73·6	76·3	79·9	81·7	84·3	86·7	89·5
	26·6	27·5	28·5	29·5	30·4	31·3	32·3
19½	71·8	73·7	76·9	79·5	82·1	84·6	87·2
	27·3	28·3	29·2	30·4	31·2	32·2	33·1
20	70·0	72·5	75·0	77·5	80·0	82·5	85·0
	28·0	29·0	30·0	31·0	32·0	33·0	34·0
20½	68·3	70·7	72·0	75·7	78·0	80·0	82·7
	23·8	29·7	30·7	31·8	32·8	33·8	34·8

Example:—To find cranial index of skull 15 cm. broad by 19 cm. long, look down vertical column headed 15 and along horizontal line opposite figure 19, and read off cranial index 79·9 and foundation index 28·5 (really 285 square cm.).

These seem to us the main points of interest elicited during the progress of our inquiries, and we now have the pleasure of submitting them to the Anthropological Institute for comment and discussion.

Description of Plate IV.

This Plate represents in graphic form the results given in Table I. The black vertical lines represent the 5th, 25th, 50th, 75th and 95th percentiles. The various curves cross these at points showing the measurements reached by 95, 75, 50, 25 and 5 per cent. of the subjects measured. The letters attached to either end of each curve indicate the different classes whose measurements are given.

HM (continuous thick curve) = Health Exhibition results for males.
HF (continuous thin) = Health Exhibition results for females.
AJM (thick bars) = All Jews. AJF (thin bars) = All Jewesses.
WJM (heavy stars) = West End Jews. WJF (light stars) = West End Jewesses.
EJM (heavy dots) = East End Jews. EJF (light dots) = East End Jewesses.
S (dots and bars) = Sephardim or Spanish Jews.

Thus to take an example: if we arranged 100 of each of these classes in a row from the shortest to the tallest, the seventy-fifth in each company would have the height shown by the measurement indicated by the corresponding curve at the seventy-fifth percentile of the lowest set of curves; *e.g.* the seventy-fifth of the East End Jews would be exactly 66 inches, of the Sephardim exactly 68, and so on with the rest.

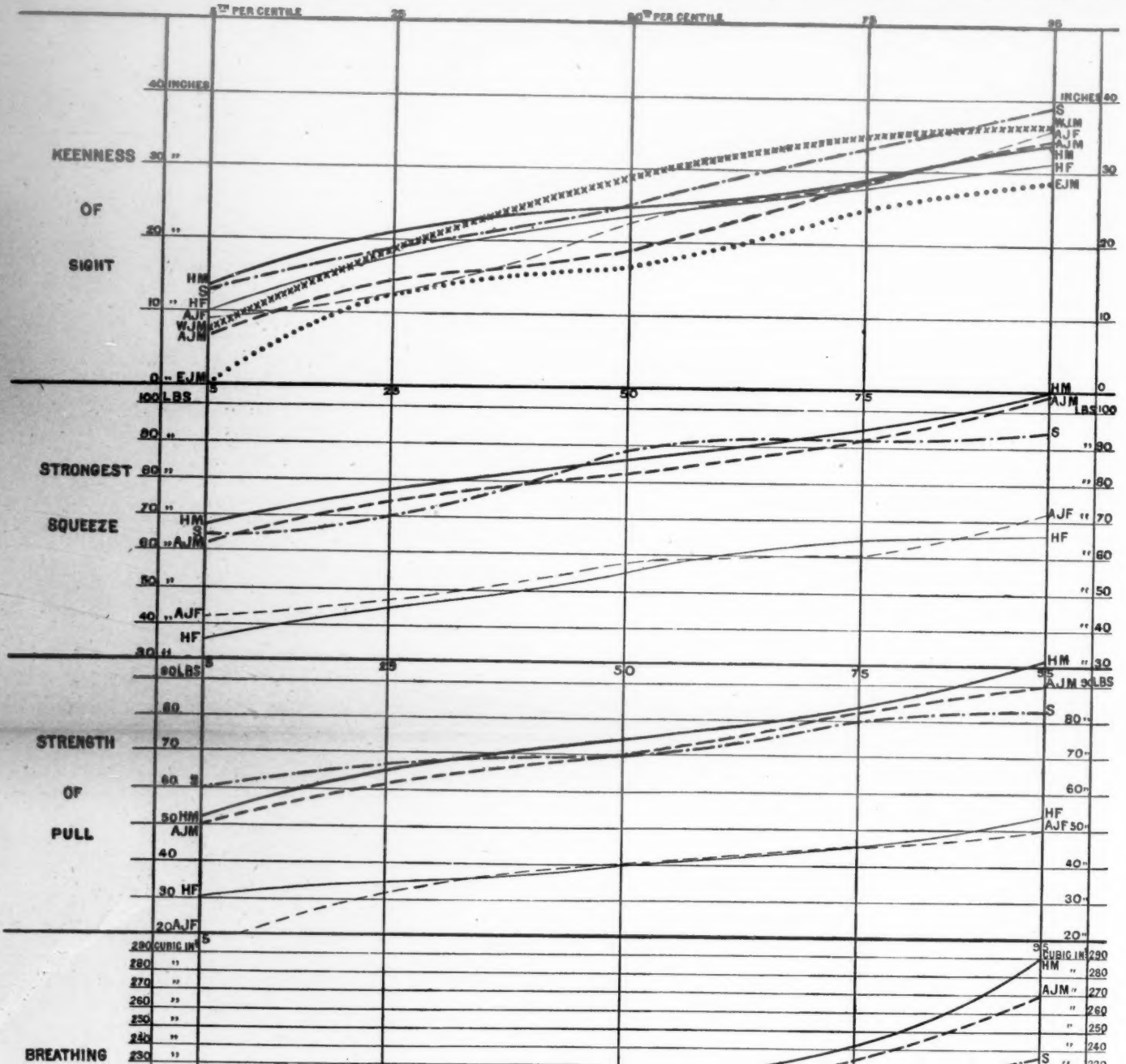
Discussion.

Mr. Brabrook said that, as he had been Secretary to the Anthropometric Committee of the British Association for several years, it was a satisfaction to him to find that the conclusions of that Committee as to the importance of nurture were borne out by the patient and painstaking investigations of the authors of the paper. With regard to the comparison between Mr. Galton's Health Exhibition statistics and those in the paper, it was to be borne in mind that those who visited the Exhibition and presented themselves for measurement would in the main be healthy persons in good spirits with money in their pockets, and would therefore be rather above than below the average of persons of the same class of life, and while the same might be true in some degree of the Jews referred to in the paper it would not be so to the same extent. This consideration might slightly modify the differences observed. It was in his recollection of the conclusions to which his Committee came that they found the tests of strength by pulling to give doubtful results, and he was therefore disposed to set those aside; but the other observations of Messrs. Jacobs and Spielman appeared to him to be very interesting and valuable.

Prof. Rupert Jones asked if the measured visitors of the Health Exhibition referred to may not have included a sufficient number of Jews and Jewesses to have modified the value of the results when taken merely as for English people.

Dr. Phené and Dr. Garson also joined in the discussion.

Mr. Jacobs in reply mentioned that very few, if any, Jewish visitors of the Health Exhibition visited Mr. Galton's Laboratory. It was possible that the class of Jews which had been termed in the paper "West End Jews" were slightly better nurtured than the average visitor of the Exhibition.


5TH PER CENTILE
25
50TH PER CENTILE
75
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KEENNESS OF SIGHT
INCHES
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STRONGEST SQUEEZE
LBS
STRENGTH OF PULL
BREATHING
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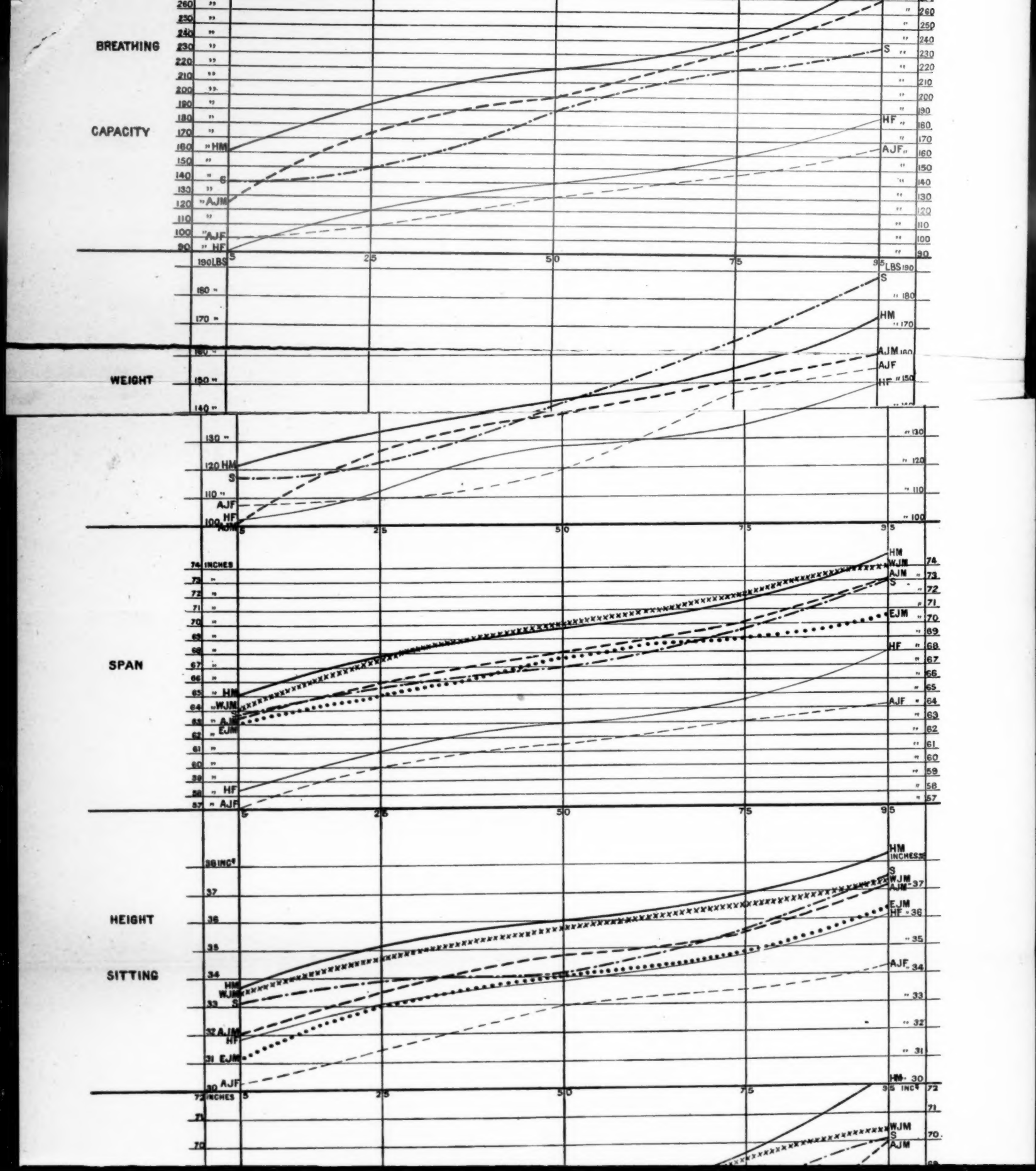
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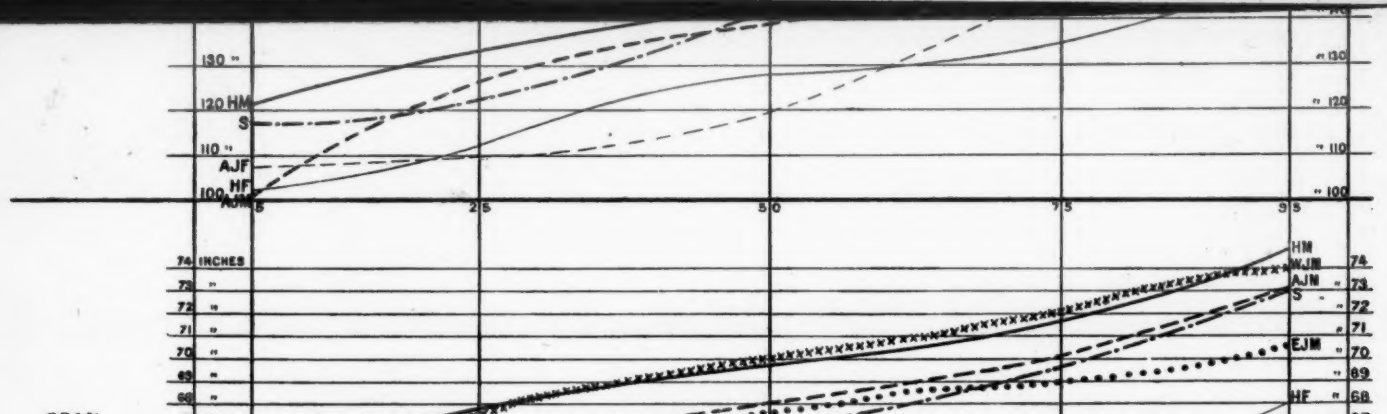
130 "
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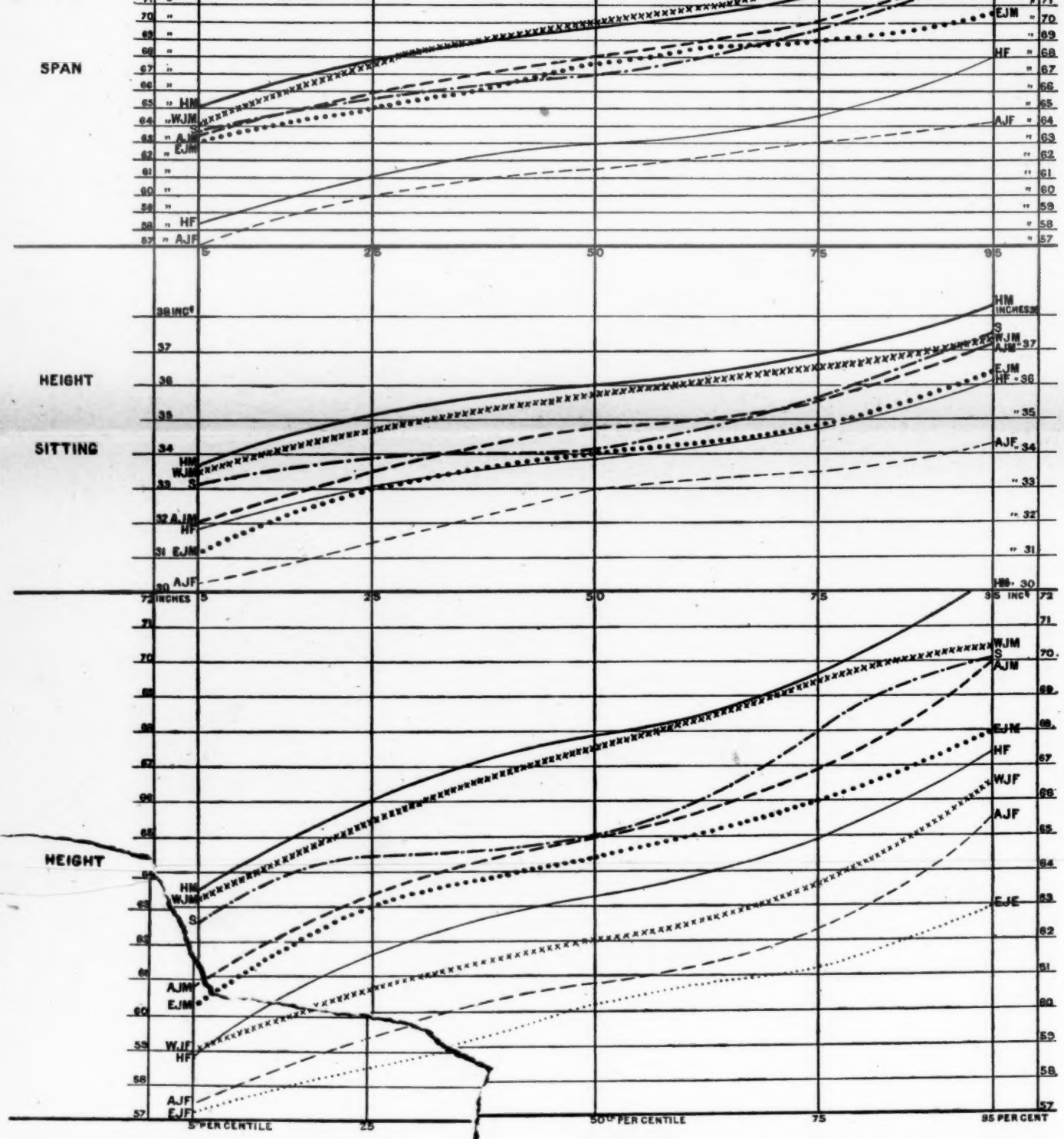

GRAPHIC REPRESENTATION OF THE RESULTS OF MESSRS. JACOBS AND SPIELMAN'S MEASUREMENTS OF ENGLISH JEWS COMPARED WITH MR. GALTON'S MEASUREMENTS AT THE HEALTH EXHIBITION.

ANTHROPOLOGICAL MISCELLANEA.

Race and Language.

(Journ. of the Anthrop. Inst., vol. xviii, page 439).

Either Mr. Holmes has misunderstood the Duke of Argyll, or the Duke, Captain Burt.

The passage apparently referred to is as follows :—

"The Irish tongue was, I may say lately, universal even in many parts of the Lowlands; and I have heard it from several in Edinburgh, that before the Union, it was the language of the Shire of Fife, although that county be separated from the capital only by the Frith of Forth, an arm of the sea, which from thence is but seven miles over; and, as a proof, they told me, after that event (the Union) it became one condition of an indenture, when a youth of either sex was to be bound on the Edinburgh side of the water, that the apprentice should be taught the English tongue."—"Letters from a Gentleman in the North of Scotland." London, 1822. Page 158.

In that edition, there is a footnote, expressing doubt as to the correctness of the statement; but disproof would obviously be hard. Folk-speech usually lingers long after the official language has changed. James IV. is an authenticated instance of a man in Fife speaking Gaelic. He seems to have understood King-craft better than some recent writers who have pictured the later Kings of Scots siding completely with one portion of their subjects.

From a variety of sources comes evidence that Gaelic was spoken in Galloway till about the middle of the 18th century. The whole question of speech-changing in the British Isles is most interesting, but wants viewing achromatically. In Scotland, we may begin by debarrassing ourselves of that "great magic transformation scene" which some associate with a refugee Saxoness; and, throughout the Union, we must recognise that change of speech, or even change of sovereignty, implies no change of race.

Walter M. T. Campbell.

1*st June*, 1889.

Note *by* Mr. A. W. Howitt, *as to* Descent *in the* Dieri Tribe.

A letter from Mr. Howitt to Dr. Tylor, September 21st, 1888, contains the following remarks, which are communicated to the Anthropological Institute at the writer's desire. It should be explained that Mr. Frazer's communication ("Journ. Anthrop. Inst.," vol. xvii, p. 185), was sent in correction of a statement by Mr. Howitt ("Journ. Anthrop. Inst.," vol. xiii, p. 457), that descent in the Dieyerie tribe is uterine. Mr. Howitt now produces evidence that his original statement was correct.

"You may remember a notice which was sent by Mr. Frazer to the 'Journ. Anthrop. Inst.,' conveying a statement by Gason that with the Dieri the sons take the father's murdu and the girls that of the mother. When I saw this I could hardly believe my eyes, because my own knowledge was against this, as well as the statements made to me by the missionaries in the Dieri country. I thereupon wrote to the Lutheran Mission at Kopperamana, requesting that further enquiries might be made. The reply was that the Dieri said all the children, both girls and boys, take the murdu of the mother and not of the father. In order to further check the statement, I again wrote to the missionary asking him to enquire from the Dieri concerning a certain man who was the head man of the tribe when I knew it, and of whom Gason has written much in giving me information about the Dieri. This man I knew to have been of the Manyura (*Portulacea oleracea*) murdu. In reply I hear now that: (1.) His murdu was Manyura; (2.) His mother's murdu was Manyura; (3.) His father's murdu was Warnyati (Emu).

"I also learned from a correspondent who is well acquainted with the tribe which adjoins the Dieri in the south-west that with them the children are all of the same murdu as their mother. He sent me a list of a number of the tribespeople which showed this conclusively. I am now quite sure that Gason has made a mistake, but I must say for him that it is about the only one I have found out, except a few inaccuracies in some of the less common relationship terms."

Sepulchral Chambers *in* Tumuli *in* Finistère.

We have received, through Admiral Tremlett, particulars of the discovery in tumuli by M. de Chatélier of two unopened sepulchral chambers of peculiar construction. The first is at Panker, Plonbalanec, Finistère, and is a chamber, 3 metres long, 1 metre 54 broad, and 2 metres 60 high, the walls being of uncemented masonry and the roof consisting of a single large slab; round the bottom of the chamber is a ledge or bench of dry masonry, about a foot wide and high; which had supported thick planks of oak forming a floor, this was thickly covered with oak leaves, amongst which were the

incinerated remains of one body, two small bronze daggers, and a small two-handled urn, which had originally been covered with a coarse cloth, particles of which still adhered to it. The second is at Kergounion, near Guissény, Finistère, and is also of uncemented masonry, covered with a single stone; the chamber is 2 metres 40 long, 1 metre 45 broad, and 1 metre 45 high; it had an oak floor but not a ledge of masonry to support it, and there was also an oak ceiling covered with clay at about two thirds of the height of the chamber; the floor was covered with sea sand on which reposed a skeleton: near its waist were a bronze dagger and two bronze plaques, near the head was a vase with four handles, and on the forehead a circle of bronze; the skull had been trepanned, and the operation had apparently been successful. We do not remember any other instance of a wooden ceiling being found under a capstone in a chamber of this kind or dolmen.

A. L. L.

INTERNATIONAL CONGRESS *of* PREHISTORIC ANTHROPOLOGY *and* ARCHÆOLOGY.

The Tenth Session of the "Congrès International d'Anthropologie et d'Archéologiè Préhistoriques," will be held in Paris, at the Collège de France, from August 19th to 26th, under the Presidency of Professor A. de Quatrefages.

The following is the Programme of subjects for discussion:—

Question I.—Creusement et remplissage des vallées, remplissage des cavernes, dans leurs rapports avec l'ancienneté de l'homme.

Question II.—Périodicité des phénomènes glaciaires.

Question III.—L'art dans les alluvions et dans les cavernes. Valeur des classifications paléontologiques et archéologiques à l'époque quaternaire.

Question IV.—Relations chronologiques entre les civilisations de la pierre, du bronze et du fer.

Question V.—Relations entre les civilisations de Hallstadt et des autres stations danubiennes et celles de Mycènes, de Tirynthe, d'Issarlik et du Caucase.

Question VI.—Examen critique des crânes et ossements quaternaires signalés dans les quinze dernières annés.—Éléments ethniques propres aux divers âges de la pierre, du bronze et du fer, dans l'Europe centrale et occidentale.

Question VII.—Survivances ethnographiques pouvant jeter quelque lumière sur l'état des populations primitives de l'Europe centrale et occidentale.

Question VIII.—Jusqu'à quel point les analogies d'ordre archéologique et ethnographique peuvent-elles autoriser l'hypothèse de relation ou de migrations préhistoriques?

Other questions besides those in this programme may be discussed, but notice of bringing such subjects forward should be sent in advance to the General Secretary of the Organizing Committee, Dr. E. T. Hamy, 40, Rue de Lübeck, Paris.

The subscription is fixed, as on former occasions, at twelve francs. Those who desire to join the Congress should send this amount to the Treasurer, the Baron de Baye, 58, Avenue de la Grande-Armée, Paris.

French Association *for the* Advancement *of* Science.

The "Association Française pour l'Avancement des Sciences" will hold its annual session from August 8 to 14, under the Presidency of Professor H. de Lacaze Duthiers. The usual custom of meeting in the provinces will this year be departed from, in consequence of the Exhibition, and the session will be held in Paris. The offices are at 28, Rue Serpente, Paris, and M. A. Fournier is the Secretary.

The British Association.

The fifty-ninth annual meeting of the British Association for the Advancement of Science will be held at Newcastle-upon-Tyne, commencing on Wednesday, September 11, under the Presidency of Professor W. H. Flower, C.B., LL.D., F.R.S., &c. The Section of Anthropology (Section H) will be presided over by Professor Sir W. Turner, M.B., LL.D., F.R.S., L. & E. The Vice-President of this section is Professor G. H. Philipson, M.A., M.D., D.C.L., F.R.C.P. The Secretaries are Mr. G. W. Bloxam, M.A. (Recorder); Dr. J. G. Garson, Vice-President of the Anthropological Institute; and Mr. J. Rutherford Morison. Communications, accompanied by the necessary abstracts for publication in the Report, should be sent as early as possible to the General Secretaries, British Association, 22, Albemarle Street, W.

Professor Weismann's Essays.

It is now four years since Mr. A. E. Shipley called attention in the "Nineteenth Century" to Prof. Weismann's Essays on Heredity. In response to the interest which has been aroused a collection of the essays has been translated under the care of Mr. E. B. Poulton, of Oxford, and will form the second volume of the "Series of Translations of Foreign Biological Memoirs," which the Clarendon Press is publishing.